SUMMARY OF ALBERTA INDUSTRIAL WASTEWATER LIMITS AND MONITORING REQUIREMENTS

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TABLE OF CONTENTS

PREFACE *1*

Intended Audience and Use of this Document 1

Disclaimer 1

SUMMARY OF INDUSTRIAL LIMITS *2*

SUMMARY OF INDUSTRIAL MONITORING *2*

Units and Limits Conventions 7

Limits Averaging Periods 7

Sample Type 7

SUMMARY OF SECTORS *8*

INTRODUCTION TO TABLES *9*

TAB 1. **SECTOR SPECIFIC LIMITS AND MONITORING**

Tab A	Chemical Plants
Tab B	Coal Mines – Mountain and Prairie
Tab C	Fertilizer Manufacturing Plants
Tab D	Foundry
Tab E	Gas Plants
Tab F	Meat Processing Plants
Tab G	Oilseed Processing Plants
Tab H	Potato Processing Plants
Tab I	Power Plants
Tab J	Pulp and Paper Mills – BKP and TMP
Tab K	Refineries

TAB 2. **APPENDIX A** **SECTOR SPECIFIC WASTEWATER LIMITS AND MONITORING REQUIREMENTS**

SUMMARY OF ALBERTA INDUSTRIAL WASTEWATER LIMITS AND MONITORING REQUIREMENTS

PREFACE

Intended Audience and Use of this Document

This document is intended to serve as a general reference on wastewater discharge limits and monitoring requirements for Alberta industries approved under *Alberta's Environmental Protection and Enhancement Act* (EPEA).

The information presented in this document is subject to continuous change. Because Approvals under EPEA are updated, differences to the limits and monitoring requirements presented in the attached tables are bound to arise. In addition, the evolution of departmental policy may affect the way monitoring requirements and limits are established on a sector-specific and facility-specific basis. The facility approvals (available from Alberta Environment) must be considered for current monitoring requirements and limits requirements for a particular facility.

The report should not be used to predict which limits or monitoring requirements may be imposed on new facilities or on facilities subject to approval renewals. The Department assigns limits and monitoring requirements only after an in-depth review of a facility.

Industrial wastewater limits and monitoring requirements are summarised for eleven different industrial sectors. The limits and monitoring requirements are presented in two distinct sets of tables on a sector-specific basis.

Disclaimer

No part of these tables may be cited in any form or used for anything other than their intended use as described above. Facility approvals should always be consulted for specific information.

SUMMARY OF INDUSTRIAL LIMITS

Table 1 represents a one page listing of the parameters that have associated limits in approvals under EPEA. The list of parameters for any sector is the total list for which there are limits in a sector, and should not be interpreted to mean that all parameters indicated apply to each facility. Shading is used to indicate what percentage of facilities, within the industrial sector, have limits for the parameter.

SUMMARY OF INDUSTRIAL MONITORING

Table 2 summarizes the monitoring required within each sector. These monitoring requirements are not necessarily common to each facility. Some of the substances actually represent groups of substances, for example heavy metals, and priority pollutants.

Shading is used in this table to indicate what percentage of facilities, within the industrial sector, monitor the parameter.

Table 1 - Summary of Industrial Sectors and Parameters with Associated Limited Parameters

INDUSTRY	LIMITED PARAMETERS																																
	Acute Lethality Tests	Adsorbable Organic Halides	Ammonia-Nitrogen	Biochemical Oxygen Demand	Chemical Oxygen Demand	Chloride	Colour	Cr, Cu, Pb, Hg, Zn	Dioxins and Furans	Dissolved Sulfide	Fecal Coliforms	Floating Solids and Visible Foam	Flow Rate	Free Available Chlorine	Free Chlorine Residual	Hydrazine Residual	Iron	Manganese	Nitrate-Nitrogen	Oil and Grease	Oil and Other Substances	Organic Nitrogen	pH	Phenols	Phosphate	Plant Water Consumption Rate	Resin and Fatty Acids	Settleable Solids	Sublethal/Chronic Toxicity	Total Chlorine Residual	Total Iron	Total Kjeldahl Nitrogen	Total Nitrogen	Total Organic Carbon	Total Phosphorus
Chemical Plants	■		■	■	■			■				■									■		■		■								■		■	■
Coal Mines - Mountain	■			■								■									■		■													
Coal Mines - Prairie												■									■		■					■								
Fertilizer Manufacturing Plants	■		■									■							■		■	■	■		■											
Foundry	■				■							■									■		■								■					
Gas Plants	■		■		■	■						■			■					■			■													
Meat Processing Plants			■	■							■	■			■					■			■		■											
Oilseed Processing Plants				■								■									■		■													
Potato Processing Plants			■	■	■	■						■									■		■			■										
Power Plants	■											■		■		■	■			■			■								■			■		■
Pulp and Paper Mills - TMP	■			■	■		■					■								■			■				■									
Pulp and Paper Mills - BKP	■	■		■	■		■		■			■						■		■			■				■		■							
Refineries	■		■		■					■			■							■			■	■												

White – no limits for parameter
Grey – some (<50%) of the facilities in this industry limit this particular parameter
Black – most (50% or greater) of the facilities in this industrial group put limits on this parameter.

NOTE: Limits may be for Industrial Wastewater, Industrial Runoff, Sanitary Sewage, Cooling Water, or Boiler Wet Storage Water

Table 2 - Summary of Industrial Sectors and Parameters with Associated Monitoring Parameters

Industry	Parameters with Monitoring Requirements																																			
	Biochemical Oxygen Demand	Total Suspended Solids	Chemical Oxygen Demand	Oil and Other Substances	Acute Toxicity Testing	Chronic Toxicity Testing	Ammonia-Nitrogen	pH	Flow/Discharge Volume	Total Organic Carbon	Floating Solids	Visible Foam	Cr,Cu,Pb,Hg,Zn	Chlorine (free Chlorine)	Microtox	Dissolved Organic Carbon	Priority Pollutants	Receiving Water	Total Kjeldahl Nitrogen	Chloride	Phosphate	Organic Nitrogen	Hydrogen Peroxide	Alkyl Benzenes	Vinyl Chloride Monomer	Total Dissolved Solids	Styrene, Benzene, Ethylbenzene, Toluene	Total Phosphorus	Dicyclopentadiene	Total Phenolics	Arsenic	Mercury	Chromium	Zinc	Lead	Conductivity	Chlorate
Chemical Plants																																				
Coal Mines - Mountain																																				
Coal Mines - Prairie																																				
Fertilizer Plants																																				
Foundry																																				
Gas Plants																																				
Meat Processing Plants																																				
Oilseed Processing Plants																																				
Potato Processing Plants																																				
Power Plants																																				
Pulp and Paper Mills - TMP																																				
Pulp and Paper Mills - BKP																																				
Refineries																																				

White – no limits for parameter
Grey – some (<50%) of the facilities in this industry limit this particular parameter
Black – most (50% or greater) of the facilities in this industrial group put limits on this parameter.

NOTE: Monitoring requirements may be for Industrial Wastewater, Industrial Runoff, Sanitary Sewage, Blowdown Canal Effluent, Boiler Wet Storage Water, Chiller, or Cooling Waters.
NOTE: See individual approvals for breakdowns for heavy metals, nutrients, chlorinated phenolics, dioxins and furans, organic priority pollutants, and resin and fatty acids for each facility.

-cont. Table 2 - Summary of Industrial Sectors and Parameters with Associated Monitoring Parameters

Industry	Parameters with Monitoring Requirements																																						
	Hexavalent Chromium	Turbidity	Nitrate/Nitrite	Nitrate-Nitrogen	Iron	Once a Year Comprehensive Analysis	Settleable Solids	Uranium	Gross-Alpha	Gross-Beta	Sodium Adsorption Ratio	Heavy Metals	Oil and Grease	Fluoride	Total Metals	Total Iron	Sulphate	Total Phosphate	Free Chlorine Residual	Luminescent Bacterial Test	Total Hardness	Temperature	Calcium, Sodium, Magnesium	Faecal Coliforms	Plant Water Consumption Rate	Potassium	Total Dissolved Phosphorus	Dissolved Oxygen	Total Nitrogen	Free Available Chlorine	Total Chlorine Residual	Hydrazine Residual	Colour	Total Alkalinity	Calcium, Sodium, Potassium	Total Silica	Resin and Fatty Acids	Specific Conductance	Nutrients
Chemical Plants	■																																						
Coal Mines - Mountain		■	■	■	■																																		
Coal Mines - Prairie						■	■																																
Fertilizer Manufacturing Plants				■				■	■	■	■	■	■																										
Foundry													■	■	■	■																							
Gas Plants															■		■	■	■	■	■	■																	
Meat Processing Plants				■							■								■				■	■															
Oilseed Processing Plants																																							
Potato Processing Plants				■							■														■	■	■												
Power Plants		■	■		■							■	■				■				■	■						■	■	■	■	■	■	■	■	■			
Pulp and Paper Mills - TMP												■	■				■							■									■				■	■	■	■
Pulp and Paper Mills - BKP												■	■									■											■				■	■	■	■
Refineries												■	■																										

White – no limits for parameter
Grey – some (<50%) of the facilities in this industry limit this particular parameter
Black – most (50% or greater) of the facilities in this industrial group put limits on this parameter.

NOTE: Monitoring requirements may be for Industrial Wastewater, Industrial Runoff, Sanitary Sewage, Blowdown Canal Effluent, Boiler Wet Storage Water, Chiller, or Cooling Waters.
NOTE: See individual approvals for breakdowns for heavy metals, nutrients, chlorinated phenolics, dioxins and furans, organic priority pollutants, and resin and fatty acids for each facility.

- cont. Table 2 - Summary of Industrial Sectors and Parameters with Associated Monitoring Parameters

Industry	Parameters with Monitoring Requirements																				
	Organic Priority Pollutants	Ultimate Biochemical Oxygen Demand	Total Phenols	Major Ions	Chelators	Sodium, Silicate	Total Organic Carbon or Chemical Oxygen Demand	Chemical Oxygen Demand or Biochemical Oxygen Demand	Adsorbable Organic Halides	Threshold Odour Number	Chlorate/Chlorite	Chlorinated Phenolics	Toluene	Chloroform	Sulfides	Dioxins and Furans	Polychlorinated Biphenyls (PCB)	Manganese (Soluble)	Phenols	Dissolved Sulfide	Phosphorus
Chemical Plants																					
Coal Mines - Mountain																					
Coal Mines - Prairie																					
Fertilizer Manufacturing Plants																					
Foundry																					
Gas Plants																					
Meat Processing Plants																					
Oilseed Processing Plants																					
Potato Processing Plants																					
Power Plants																					
Pulp and Paper Mills - TMP																					
Pulp and Paper Mills - BKP																					
Refineries																					

White – no limits for parameter
Grey – some (<50%) of the facilities in this industry limit this particular parameter
Black – most (50% or greater) of the facilities in this industrial group put limits on this parameter.

NOTE: Monitoring requirements may be for Industrial Wastewater, Industrial Runoff, Sanitary Sewage, Blowdown Canal Effluent, Boiler Wet Storage Water, Chiller, or Cooling Waters.
NOTE: See individual approvals for breakdowns for heavy metals, nutrients, chlorinated phenolics, dioxins and furans, organic priority pollutants, and resin and fatty acids for each facility.

Units and Limits Conventions

Approval limits are expressed in various formats. Approval limits can be expressed as a total loading limit, e.g., kg/d, or a concentration based limit. A limit for a substance may be applied as an average monthly limit, a maximum monthly amount, daily limits or as an instantaneous maximum. The substance may be limited using one or more conventions depending on the substance and sampling regime.

Daily limits are normally determined from grab samples or composite samples collected over an entire day. Average monthly limits represent the arithmetic average of the daily results over one month. Instantaneous maximums are normally determined from grab samples or from in-line recorders. Parameters such as pH and conductivity are typically expressed as instantaneous maximum limits.

Limits Averaging Periods

The concept of averaging periods is important when comparing facility performance. The averaging period is the length of time over which a measured quantity of a substance is averaged when assessing compliance with an approval limit. The averaging period can have a significant effect on a resultant limit. Limits may be specified with different averaging periods such as annually, semi-annually, monthly, daily (24-hour) or instantaneous.

Sample Type

Substances are measured in effluent samples, which are taken in various ways. A commonly used sample is the 24-hour composite, which is comprised of small samples of the effluent taken at regular intervals over a 24-hour period. Another commonly used sample is the grab sample obtained by taking an effluent sample over a short time period. Representative grab samples are typically taken prior to batch discharges from a number of sampling points for one water source. Substances may also be measured continuously using in-line monitors or recorders.

SUMMARY OF SECTORS

The attached Tabs are organized alphabetically according to industrial sector. These sectors may contain subsectors of similar facilities. Facilities within a subsector can be extremely diverse due to the range and combination of operations, treatment systems, and wastewaters that can be present at individual facilities.

Table 3 contains a summary of each industrial sector reviewed. Table 3 does not represent all of the facilities approved for wastewater discharges in the province (many minor discharges have not been included).

Table 3 - Summary of Industrial Sectors

INDUSTRY/ SECTOR	SUBSECTOR	NUMBER OF FACILITIES (IN THIS DOCUMENT)
Chemical Plants		11
Coal Mines		12
	Mountain	5
	Prairie	7
Fertilizer Manufacturing Plants		4
Foundry		1
Gas Plants		20
Meat Processing Plants		2
Oilseed Processing Plants		2
Potato Processing Plants		2
Power Plants		10
Pulp and Paper Mills		7
	Thermomechanical Process	3
	Bleached Kraft Process	4
Refineries		6

INTRODUCTION TO TABLES

Limits and Monitoring requirements for each of the 11 selected industrial sectors are presented in the following sections, which are organized alphabetically by industrial sector. Each section is prefaced by an introduction which provides a summary of each section.

Any abbreviation used in the following tables is defined at the bottom of each page. The tables contain two different sets of information. The first set of tables for each industry contains limits and related information. The second set of tables contains monitoring requirements for each industry.

On all of the tables, the facility names appear in the first column. This is followed by a column with the most current approval and amendment number. The third column contains the source of the wastewater, which for most facilities, is either Industrial Wastewater (IW) or Industrial Runoff (IR).

For pulp mill data, an extra column, called Production Capacity, has been inserted between the approval number column and the source column. Production Capacity for bleached kraft process mills and thermomechanical process mills is the design production capacity, which may be exceeded. This column has been included to make comparisons between facilities possible.

TAB 1. A CHEMICAL PLANTS

Limits and Monitoring for eleven chemical plants in Alberta are provided. Of the eleven plants, eight have effluent limits and ten have effluent monitoring requirements. One facility does not have any effluent limits or monitoring because it discharges to a municipal wastewater collection system. Two other facilities do not have limits associated with them. These facilities either do not directly discharge to a waterbody, or the industrial wastewater is disposed of in brine wells. However the industrial runoff is discharged to a watershed.

Four of the chemical plants discharge to the North Saskatchewan River, two discharge to the Red Deer River, and one releases wastewater to Jones Creek. There are many different parameters for these facilities because there are different chemicals produced at each of the plants.

Limits

- Three of the chemical plants have limits for Industrial Runoff.
- Six have limits associated with Industrial Wastewater discharges.
- One has limits for Sanitary Sewage.
- Two have limits for Industrial Wastewater and Industrial Runoff.

Monitoring

- Six of the chemical plants monitor Industrial Wastewater discharges.
- Two monitor Sanitary Sewage.
- Three monitor Industrial Runoff.
- One monitors Cooling Waters.
- Two monitor Industrial Wastewater and Industrial Runoff.

M121

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Chemical Plants - Limits

AT Plastics Inc. Edmonton Chemical Manufacturing Plant 1480-01-00	1480-01-00	IR1	In accordance with the City of Edmonton Sewers Use Bylaw.		In accordance with the City of Edmonton Sewers Use Bylaw.				In accordance with the City of Edmonton Sewers Use Bylaw.
		IR2	60 mg/L					20 mg/L	15 mg/L
Celanese Canada Inc. Edmonton Petrochemical Manufacturing Plant 1349-01-04	1349-01-04	IR							
		IW1					440	1300	Not present in amounts sufficient to create a visible film or sheen
Dow Chemical Canada Inc. Fort Saskatchewan Chemical Manufacturing Plant 236-00-20, 237-00-14	Being Renewed	IW2					400	750	Not present in amounts sufficient to create a visible film or sheen
Degussa Canada Ltd. Gibbons Hydrogen Peroxide Manufacturing Plant	1034-01-03 95-IND-062	IW3					14	20	Not present in amounts sufficient to create a visible film or sheen
Geon Canada Inc. Scotford Polyvinyl Chloride Plant 194-01-01	194-01-01	IW4					14	42	Not present in amounts sufficient to create a visible film or sheen

COD= Chemical Oxygen Demand (mg/L)

IR= Industrial Runoff

IR1= Industrial Runoff from Storm Sewers

IR2= Industrial Runoff from the SR Holding Pond

IW1= Industrial Wastewater from the South Flume

IW2= Industrial Wastewater from the Liquid Effluent Pond

IW3= Industrial Wastewater from the Final Effluent Sump

IW4= Industrial Wastewater from the Effluent Retention Basins

MDA= Maximum Daily Average (for any month)

MDL= Maximum Daily Limit

MAA= Monthly Arithmetic Average

MMA= Maximum Monthly Amount (for any month)

O&G= Oil and Other Substances

TSS= Total Suspended Solids

Chemical Plants - Limits

Chemical Plants				Parameters and Associated Limits (All units are in kg/d, unless otherwise specified)					
Facility	Approval #	Source	COD	TSS					
				Time Period	MAA	MMA	MDL	MDL	
AT Plastics Inc. Edmonton Chemical Manufacturing Plant 1480-01-00	1480-01-00	IR1	In accordance with the City of Edmonton Sewers Use Bylaw		In accordance with the City of Edmonton Sewers Use Bylaw.				In accordance with the City of Edmonton Sewers Use Bylaw.
		IR2	60 mg/L					20 mg/L	15 mg/L
Celanese Canada Inc. Edmonton Petrochemical Manufacturing Plant 1349-01-04	1349-01-04	IR							
		IW1					440	1300	Not present in amounts sufficient to create a visible film or sheen
Dow Chemical Canada Inc. Fort Saskatchewan Chemical Manufacturing Plant 236-00-20, 237-00-14	Being Renewed	IW2					400	750	Not present in amounts sufficient to create a visible film or sheen
Degussa Canada Ltd. Gibbons Hydrogen Peroxide Manufacturing Plant	1034-01-03 95-IND-062	IW3					14	20	Not present in amounts sufficient to create a visible film or sheen
Geon Canada Inc. Scotford Polyvinyl Chloride Plant 194-01-01	194-01-01	IW4					14	42	Not present in amounts sufficient to create a visible film or sheen

COD= Chemical Oxygen Demand (mg/L)

IR= Industrial Runoff

IR1= Industrial Runoff from Storm Sewers

IR2= Industrial Runoff from the 5R Holding Pond

IW1= Industrial Wastewater from the South Flume

IW2= Industrial Wastewater from the Liquid Effluent Pond

IW3= Industrial Wastewater from the Final Effluent Sump

IW4= Industrial Wastewater from the Effluent Retention Basins

MDA= Maximum Daily Average (for any month)

MDL= Maximum Daily Limit

MAA= Monthly Arithmetic Average

MMA= Maximum Monthly Amount (for any month)

O&O= Oil and Other Substances

TSS= Total Suspended Solids

Chemical Plants			Parameters and Associated Limits (All units are in kg/d, unless otherwise specified)								
Facility	Approval #	Source	Cr, Cu, Pb, Hg, Zn MDA	NH_3-N MDL	pH (Units) NTBE	ALT (Rainbow trout)	FS/VF	TOC Time Period	MMA	MDA	MDL
AT Plastics Inc. Edmonton Chemical Manufacturing Plant 1480-01-00	1480-01-00	IR1	In accordance with the City of Edmonton Sewers Use Bylaw.	10 mg/L	6.0-9.5	50% or greater survival in 100% industrial wastewater sample	Not present				
		IR2		10 mg/L	6.0-9.5		Not present				
Celanese Canada Inc. Edmonton Petrochemical Manufacturing Plant 1349-01-04	1349-01-04	IR			6.0-9.5						100 mg/L
		IW1			6.0-9.5	50% or greater survival in 100% industrial wastewater sample	None except in trace amounts			220	585
Dow Chemical Canada Inc. Fort Saskatchewan Chemical Manufacturing Plant 236-00-19, 237-00-00 93-WL-026 91-AL-087(F)	Being Renewed	IW2	20	40	6.0-9.5	50% or greater survival in 100% wastewater sample	None except in trace amounts			400	900
Degussa Canada Ltd. Gibbons Hydrogen Peroxide Manufacturing Plant	1034-01-03 95-IND-062	IW3	1 (net)	2 (net)	6.0-9.5	50% or greater survival in 100% industrial wastewater sample	None except in trace amounts				
Geon Canada Inc. Scotford Polyvinyl Chloride Plant 194-01-01	194-01-01	IW4			6.0-9.5	50% or greater survival in 100% industrial wastewater sample	None except in trace amounts			22	65

ALT= Acute Lethality Tests

NH_3-N= Ammonia-Nitrogen

Cr, Cu, Pb, Hg, Zn= Chromium, Copper, Lead, Mercury, and Zinc (total mg/L for each)

FS/VF= Floating Solids or Visible Foam

IR= Industrial Runoff

IR1= Industrial Runoff from Storm Sewers

IR2= Industrial Runoff from the 5R Holding Pond

IW1= Industrial Wastewater from the South Flume

IW2= Industrial Wastewater from the Liquid Effluent Pond

IW3= Industrial Wastewater from the Final Effluent Sump

IW4= Industrial Wastewater from the Effluent Retention Basins

MDA= Maximum Daily Average (for any month)

MDL= Maximum Daily Limit

MMA= Maximum Monthly Amount (for any month)

NTBE= Not to be Exceeded

TOC= Total Organic Carbon

Chemical Plants			Parameters and Maximum Limits (All units are in kg/d, unless otherwise specified)											
Facility	Approval #	Source	TKN			BOD		Phosphate		VCM		TP		CBOD
			MMA	MDA	MDL	MDA	MDL	MDA	MDL	MDA	MDL	MDA	MDL	MAX
AT Plastics Inc. Edmonton Chemical Manufacturing Plant 1480-01-00	1480-01-00	IR1												
		IR2												
Celanese Canada Inc. Edmonton Petrochemical Manufacturing Plant 1349-01-04	1349-01-04	IR												
		IW1												
Dow Chemical Canada Inc. Fort Saskatchewan Chemical Manufacturing Plant 236-00-19, 237-00-00 93-WL-026 91-AL-087(F)	Being Renewed	IW2		75	150									
Degussa Canada Ltd. Gibbons Hydrogen Peroxide Manufacturing Plant	1034-01-03 95-IND-062	IW3				14	20	4	8					
Geon Canada Inc. Scotford Polyvinyl Chloride Plant 194-01-01	194-01-01	IW4								1.2	3.6			

BOD= Biochemical Oxygen Demand

CBOD= Carbonaceous Biochemical Oxygen Demand

IR= Industrial Runoff

IR1= Industrial Runoff from Storm Sewers

IR2= Industrial Runoff from the SR Holding Pond

IW1= Industrial Wastewater from the South Flume

IW2= Industrial Wastewater from the Liquid Effluent Pond

IW3= Industrial Wastewater from the Final Effluent Sump

IW4= Industrial Wastewater from the Effluent Retention Basins

TKN= Total Kjeldahl Nitrogen

TP= Total Phosphorus

VCM= Vinyl Chloride Monomer

AT Plastics Inc. Edmonton Chemical Manufacturing Plant 1480-01-00	1480-01-00	IR1	In accordance with the City of Edmonton Sewers Use Bylaw.	10 mg/L	6.0-9.5	50% or greater survival in 100% industrial wastewater sample	Not present				
		IR2		10 mg/L	6.0-9.5		Not present				
Celanese Canada Inc. Edmonton Petrochemical Manufacturing Plant 1349-01-04	1349-01-04	IR			6.0-9.5						100 mg/L
		IW1			6.0-9.5	50% or greater survival in 100% industrial wastewater sample	None except in trace amounts			220	585
Dow Chemical Canada Inc. Fort Saskatchewan Chemical Manufacturing Plant 236-00-19, 237-00-00 93-WL-026 91-AL-087(F)	Being Renewed	IW2	20	40	6.0-9.5	50% or greater survival in 100% wastewater sample	None except in trace amounts			400	900
Degussa Canada Ltd. Gibbons Hydrogen Peroxide Manufacturing Plant	1034-01-03 95-IND-062	IW3	1 (net)	2 (net)	6.0-9.5	50% or greater survival in 100% industrial wastewater sample	None except in trace amounts				
Geon Canada Inc. Scotford Polyvinyl Chloride Plant 194-01-01	194-01-01	IW4			6.0-9.5	50% or greater survival in 100% industrial wastewater sample	None except in trace amounts			22	65

ALT= Acute Lethality Tests

NH_3-N= Ammonia-Nitrogen

Cr, Cu, Pb, Hg, Zn= Chromium, Copper, Lead, Mercury, and Zinc (total mg/L for each)

FSVF= Floating Solids or Visible Foam

IR= Industrial Runoff

IR1= Industrial Runoff from Storm Sewers

IR2= Industrial Runoff from the SR Holding Pond

IW1= Industrial Wastewater from the South Flume

IW2= Industrial Wastewater from the Liquid Effluent Pond

IW3= Industrial Wastewater from the Final Effluent Sump

IW4= Industrial Wastewater from the Effluent Retention Basins

MDA= Maximum Daily Average (for any month)

MDL= Maximum Daily Limit

MMA= Maximum Monthly Amount (for any month)

NTBE= Not to be Exceeded

TOC= Total Organic Carbon

AT Plastics Inc. Edmonton Chemical Manufacturing Plant 1480-01-00	1480-01-00	IR1												
		IR2												
Celanese Canada Inc. Edmonton Petrochemical Manufacturing Plant 1349-01-04	1349-01-04	IR												
		IW1												
Dow Chemical Canada Inc. Fort Saskatchewan Chemical Manufacturing Plant 236-00-19, 237-00-00 93-WL-026 91-AL-087(F)	Being Renewed	IW2		75	150									
Degussa Canada Ltd. Gibbons Hydrogen Peroxide Manufacturing Plant	1034-01-03 95-IND-062	IW3				14	20	4	8					
Geon Canada Inc. Scotford Polyvinyl Chloride Plant 194-01-01	194-01-01	IW4								1.2	3.6			

BOD= Biochemical Oxygen Demand

CBOD= Carbonaceous Biochemical Oxygen Demand

IR= Industrial Runoff

IR1= Industrial Runoff from Storm Sewers

IR2= Industrial Runoff from the SR Holding Pond

IW1= Industrial Wastewater from the South Flume

IW2= Industrial Wastewater from the Liquid Effluent Pond

IW3= Industrial Wastewater from the Final Effluent Sump

IW4= Industrial Wastewater from the Effluent Retention Basins

TKN= Total Kjeldahl Nitrogen

TP= Total Phosphorus

VCM= Vinyl Chloride Monomer

Shell Chemicals Canada Ltd. Scotford Chemical Manufacturing Plant (styrene monomer) and Petrochemical Manufacturing Plant (ethylene glycol)	9767-01-06 95-IND-205	IW				2520 kg		520	Not present in amounts sufficient to create a visible film or sheen
		IW&IR1					145	430	Not present in amounts sufficient to create a visible film or sheen
		SS			25 mg/L				
NOVA Chemicals Ltd. Joffre Petrochemical and Chemical Manufacturing Plant	48309-00-00	IW&IR2					179	538 90 mg/L	Not present in amounts sufficient to create a visible film or sheen
		IW&IR3		April-June			621	811 90 mg/L	Not present in amounts sufficient to create a visible film or sheen
				July-March			515	790 80 mg/L	
Union Carbide Canada Inc. Prentiss Chemical Manufacturing Plant	70974-00-00	IW5					100	250	Not present in amounts sufficient to create a visible film or sheen
		IW6					100	250	Not present in amounts sufficient to create a visible film or sheen
		IR						25 mg/L	Not present in amounts sufficient to create a visible film or sheen
Methanex Corporation Medicine Hat Methanol Plant	95-IND-238	N/A*							
Sterling Pulp Chemicals Ltd. Grande Prairie Sodium Chlorate Plant	10980-01-00	N/A*							
CXY Chemicals Canada Ltd. Bruderheim Chemical Manufacturing Plant	10346-01-04	N/A*							

*= See Appendix

COD= Chemical Oxygen Demand (mg/L)

IW&IR1= Industrial Wastewater and Industrial Runoff form the Ethylene Glycol Plant Bioreactor

IW= Industrial Wastewater

IW5= Industrial Wastewater (Prior to start-up of the Water Recovery System)

IW6= Industrial Wastewater (After start-up of the Water Recovery System)

MDA= Maximum Daily Average (for any month)

MDL= Maximum Daily Limit

MAA= Monthly Arithmetic Average

MMA= Maximum Monthly Amount (for any month)

N/A= Not Applicable

O&O= Oil and Other Substances

IW&IR3= Industrial Wastewater and Industrial Runoff from Retention Ponds and Effluent Ponds (After commencement of operation of EIII, P

IW&IR2= Industrial Wastewater and Industrial Runoff from Retention Ponds and Effluent Ponds (Prior to operation of EIII, PEII, or COGEN

IR= Industrial Runoff

SS= Sanitary Sewage

TSS= Total Suspended Solids

Shell Chemicals Canada Ltd. Scotford Chemical Manufacturing Plant (styrene monomer) and Petrochemical Manufacturing Plant (ethylene glycol)	9767-01-06 95-IND-205	IW			6.0-9.5	50% or greater survival in 100% industrial wastewater sample	None except in trace amounts		2100 kg		360
		IW&IR1			6.0-9.5	50% or greater survival in 100% industrial wastewater sample	None except in trace amounts			120	290
		SS									
NOVA Chemicals Ltd. Joffre Petrochemical and Chemical Manufacturing Plant	48309-00-00	IW&IR2			6.0-9.5	50% or greater survival in 100% industrial wastewater sample	None except in trace amounts			269	805 105 mg/L
		IW&IR3			6.0-9.5	50% or greater survival in 100% industrial wastewater sample	None except in trace amounts	April-June		1450	2200 25 mg/L
								July-Sept.		1000	1500 115 mg/L
								Oct.-Mar.		510	1000 100 mg/L
Union Carbide Canada Inc. Prentiss Chemical Manufacturing Plant	70974-00-00	IW5			6.0-9.5	50% or greater survival in 100% industrial wastewater sample	None except in trace amounts			200	450
		IW6			6.0-9.5	50% or greater survival in 100% industrial wastewater sample	None except in trace amounts			200	450
		IR			6.0-9.5		None except in trace amounts				35 mg/L
Methanex Corporation Medicine Hat Methanol Plant	95-IND-238	N/A*									
Sterling Pulp Chemicals Ltd. Grande Prairie Sodium Chlorate Plant	10980-01-00	N/A*									
CXY Chemicals Canada Ltd. Bruderheim Chemical Manufacturing Plant	10346-01-04	N/A*									

*= See Appendix

ALT= Acute Lethality Tests

NH_3-N= Ammonia-Nitrogen

Cr, Cu, Pb, Hg, Zn= Chromium, Copper, Lead, Mercury, and Zinc (total mg/L for each)

IW&IR1= Industrial Wastewater and Industrial Runoff form the Ethylene Glycol Plant Bioreactor

FS/VF= Floating Solids or Visible Foam

IW= Industrial Wastewater

IW5= Industrial Wastewater (Prior to start-up of the Water Recovery System)

IW6= Industrial Wastewater (After start-up of the Water Recovery System)

MDA= Maximum Daily Average (for any month)

MDL= Maximum Daily Limit

MMA= Maximum Monthly Amount (for any month)

N/A= Not Applicable

NTBE= Not to be Exceeded

RP&EP(A)= Retention Pond and Effluent Pond (After commencement of operation of EIII, PEII, or COGEN)

RP&EP(P)= Retention Ponds and Effluent Ponds (Prior to operation of EIII, PEII, or COGEN)

SR= Surface Runoff

SS= Sanitary Sewage

TOC= Total Organic Carbon

Facility	Approval #	Source	COD	TSS Time Period	TSS MAA	TSS MMA	TSS MDA	TSS MDL	O&O
Shell Chemicals Canada Ltd. Scotford Chemical Manufacturing Plant (styrene monomer) and Petrochemical Manufacturing Plant (ethylene glycol)	9767-01-06 95-IND-205	IW				2520 kg		520	Not present in amounts sufficient to create a visible film or sheen
		IW&IR1					145	430	Not present in amounts sufficient to create a visible film or sheen
		SS			25 mg/L				
NOVA Chemicals Ltd. Joffre Petrochemical and Chemical Manufacturing Plant	48309-00-00	IW&IR2					179	538 90 mg/L	Not present in amounts sufficient to create a visible film or sheen
		IW&IR3		April-June			621	811 90 mg/L	Not present in amounts sufficient to create a visible film or sheen
				July-March			515	790 80 mg/L	
Union Carbide Canada Inc. Prentiss Chemical Manufacturing Plant	70974-00-00	IW5					100	250	Not present in amounts sufficient to create a visible film or sheen
		IW6					100	250	Not present in amounts sufficient to create a visible film or sheen
		IR						25 mg/L	Not present in amounts sufficient to create a visible film or sheen
Methanex Corporation Medicine Hat Methanol Plant	95-IND-238	N/A*							
Sterling Pulp Chemicals Ltd. Grande Prairie Sodium Chlorate Plant	10980-01-00	N/A*							
CXY Chemicals Canada Ltd. Bruderheim Chemical Manufacturing Plant	10346-01-04	N/A*							

*= See Appendix

COD= Chemical Oxygen Demand (mg/L)

IW&IR1= Industrial Wastewater and Industrial Runoff form the Ethylene Glycol Plant Biotreater

IW= Industrial Wastewater

IW5= Industrial Wastewater (Prior to start-up of the Water Recovery System)

IW6= Industrial Wastewater (After start-up of the Water Recovery System)

MDA= Maximum Daily Average (for any month)

MDL= Maximum Daily Limit

MAA= Monthly Arithmetic Average

MMA= Maximum Monthly Amount (for any month)

N/A= Not Applicable

O&O= Oil and Other Substances

IW&IR3= Industrial Wastewater and Industrial Runoff from Retention Ponds and Effluent Ponds (After commencement of operation of EIII, P

IW&IR2= Industrial Wastewater and Industrial Runoff from Retention Ponds and Effluent Ponds (Prior to operation of EIII, PEII, or COGEN

IR= Industrial Runoff

SS= Sanitary Sewage

TSS= Total Suspended Solids

Chemical Plants											
			(All units are in kg/d unless otherwise noted)								
Facility	Approval #	Source	Cr, Cu, Pb, Hg, Zn MDA	NH_3-N MDL	pH (Units) NTBE	ALT (Rainbow Trout)	FS/F				
Shell Chemicals Canada Ltd. Scotford Chemical Manufacturing Plant (styrene monomer) and Petrochemical Manufacturing Plant (ethylene glycol)	9767-01-06 95-IND-205	IW			6.0-9.5	50% or greater survival in 100% industrial wastewater sample	None except in trace amounts		2100 kg		350
		IW&IR1			6.0-9.5	50% or greater survival in 100% industrial wastewater sample	None except in trace amounts			120	290
		SS									
NOVA Chemicals Ltd. Joffre Petrochemical and Chemical Manufacturing Plant	48309-00-00	IW&IR2			6.0-9.5	50% or greater survival in 100% industrial wastewater sample	None except in trace amounts			269	805 105 mg/L
		IW&IR3			6.0-9.5	50% or greater survival in 100% industrial wastewater sample	None except in trace amounts	April-June		1450	2200 25 mg/L
								July-Sept.		1000	1500 115 mg/L
								Oct.-Mar.		510	1000 100 mg/L
Union Carbide Canada Inc. Prentiss Chemical Manufacturing Plant	70974-00-00	IW5			6.0-9.5	50% or greater survival in 100% industrial wastewater sample	None except in trace amounts			200	450
		IW6			6.0-9.5	50% or greater survival in 100% industrial wastewater sample	None except in trace amounts			200	450
		IR			6.0-9.5		None except in trace amounts				35 mg/L
Methanex Corporation Medicine Hat Methanol Plant	95-IND-238	N/A*									
Sterling Pulp Chemicals Ltd. Grande Prairie Sodium Chlorate Plant	10980-01-00	N/A*									
CXY Chemicals Canada Ltd. Bruderheim Chemical Manufacturing Plant	10346-01-04	N/A*									

*= See Appendix

ALT= Acute Lethality Tests

NH_3-N= Ammonia Nitrogen

Cr, Cu, Pb, Hg, Zn= Chromium, Copper, Lead, Mercury, and Zinc (total mg/L for each)

IW&IR1= Industrial Wastewater and Industrial Runoff from the Ethylene Glycol Plant Bioreactor

FS/F= Floating Solids or Visible Foam

IW= Industrial Wastewater

IW5= Industrial Wastewater (Prior to start-up of the Water Recovery System)

IW6= Industrial Wastewater (After start-up of the Water Recovery System)

MDA= Maximum Daily Average (for any month)

MDL= Maximum Daily Limit

MMA= Maximum Monthly Amount (for any month)

N/A= Not Applicable

NTBE= Not to be Exceeded

RP&EP(A)= Retention Pond and Effluent Pond (After commencement of operation of EII, PEII, or COGEN)

RP&EP(P)= Retention Ponds and Effluent Ponds (Prior to operation of EII, PEII, or COGEN)

SR= Surface Runoff

SS= Sanitary Sewage

TOC= Total Organic Carbon

Chemical Plants														
Facility	Approval #	Source	TKN			BOD		Phosphate		VCM				
			MMA	MDL	MDL	MDL	MDL	MDL	MDL	MDL	MDL	MDL	MDL	MDL
Shell Chemicals Canada Ltd. Scotford Chemical Manufacturing Plant (styrene monomer) and Petrochemical Manufacturing Plant (ethylene glycol)	9767-01-06 95-IND-205	IW	240 kg		40									
		IW&IR1												
		SS												25 mg/L
NOVA Chemicals Ltd. Joffre Petrochemical and Chemical Manufacturing Plant	48309-00-00	IW&IR2												
		IW&IR3										9.1	15.2 1 mg/L	
Union Carbide Canada Inc. Prentiss Chemical Manufacturing Plant	70974-00-00	IW5												
		IW6										3	5.2	
		IR												
Methanex Corporation Medicine Hat Methanol Plant	95-IND-238	N/A*												
Sterling Pulp Chemicals Ltd. Grande Prairie Sodium Chlorate Plant	10980-01-00	N/A*												
CXY Chemicals Canada Ltd. Bruderheim Chemical Manufacturing Plant	10346-01-04	N/A*												

*= See Appendix

BOD= Biochemical Oxygen Demand

CBOD= Carbonaceous Biochemical Oxygen Demand

IW&IR1= Industrial Wastewater and Industrial Runoff form the Ethylene Glycol Plant Biotreater

IW= Industrial Wastewater

IW5= Industrial Wastewater (Prior to start-up of the Water Recovery System)

IW6= Industrial Wastewater (After start-up of the Water Recovery System)

MDA= Maximum Daily Average (for any month)

MDL= Maximum Daily Limit

MMA= Maximum Monthly Amount (for any month)

N/A= Not Applicable

RP&EP(A)= Retention Pond and Effluent Pond (After commencement of operation of EIII, PEII, or COGEN)

RP&EP(P)= Retention Ponds and Effluent Ponds (Prior to operation of EIII, PEII, or COGEN)

SR= Surface Runoff

SS= Sanitary Sewage

TKN= Total Kjeldahl Nitrogen

TP= Total Phosphorus

VCM= Vinyl Chloride Monomer

Chemical Plants - Monitoring

Chemical Plants			Parameters to be Monitored							
Facility	Approval #	Source	BOD		TSS		COD		O&O	
			F	ST	F	ST	F	ST	F	ST
AT Plastics Inc. - Edmonton	1480-01-00	IR1	1/week	Composite	1/day	Composite	1/day	Composite	1/week	Composite
		IR2			1/day during periods of discharge	Grab	1/day during periods of discharge	Grab	1/day during periods of discharge	Grab
Celanese Canada Inc. Edmonton Petrochemical Manufacturing Plant	1349-01-04	IW1	1/week and prior to discharge	Composite	1/day and prior to discharge	Composite	1/day and prior to discharge	Composite		
Dow Chemical Canada Inc. Fort Saskatchewan Chemical Manufacturing Plant	236-00-20 237-00-14	IW2	1/week	Composite	1/day	Composite	1/week	Composite	1/day	Visual Inspection
		SS								
Degussa Canada Ltd. Gibbons Hydrogen Peroxide Manufacturing Plant	1034-01-03 95-IND-062	IW3	1/day	Composite	1/day	Composite				
Geon Canada Inc. Scotford Polyvinyl Chloride Plant	194-01-01	IW	1/week	Composite					1/day	Visual Inspection
		IW4			1/day	Composite				

BOD= Biochemical Oxygen Demand
COD= Chemical Oxygen Demand
F= Frequency
IR1= Industrial Runoff from Storm Sewers
IR2= Industrial Runoff from the 5R Holding Pond
IW= Industrial Wastewater
IW1= Industrial Wastewater from the South Flume
IW2= Industrial Wastewater from the Liquid Effluent Pond
IW3= Industrial Wastewater from the Final Effluent Sump
IW4= Industrial Wastewater from the Effluent Retention Basins
O&O= Oil and Other Substances
SS= Sanitary Sewage
ST= Sample Type
TSS= Total Suspended Solids

Shell Chemicals Canada Ltd. Scotford Chemical Manufacturing Plant (styrene monomer) and Petrochemical Manufacturing Plant (ethylene glycol)	9767-01-06 95-IND-205	IW	240 kg		40									
		IW&IR1												
		SS												25 mg/L
NOVA Chemicals Ltd. Joffre Petrochemical and Chemical Manufacturing Plant	48309-00-00	IW&IR2												
		IW&IR3										9.1	15.2 1 mg/L	
Union Carbide Canada Inc. Prentiss Chemical Manufacturing Plant	70974-00-00	IW5												
		IW6										3	5.2	
		IR												
Methanex Corporation Medicine Hat Methanol Plant	95-IND-238	N/A*												
Sterling Pulp Chemicals Ltd. Grande Prairie Sodium Chlorate Plant	10680-01-00	N/A*												
CXY Chemicals Canada Ltd. Bruderheim Chemical Manufacturing Plant	10346-01-04	N/A*												

*= See Appendix

BOD= Biochemical Oxygen Demand

CBOD= Carbonaceous Biochemical Oxygen Demand

IW&IR1= Industrial Wastewater and Industrial Runoff form the Ethylene Glycol Plant Bioreactor

IW= Industrial Wastewater

IW5= Industrial Wastewater (Prior to start-up of the Water Recovery System)

IW6= Industrial Wastewater (After start-up of the Water Recovery System)

MDA= Maximum Daily Average (for any month)

MDL= Maximum Daily Limit

MMA= Maximum Monthly Amount (for any month)

N/A= Not Applicable

RP&EP(A)= Retention Pond and Effluent Pond (After commencement of operation of EII, PEII, or COGEN)

RP&EP(P)= Retention Ponds and Effluent Ponds (Prior to operation of EII, PEII, or COGEN)

SR= Surface Runoff

SS= Sanitary Sewage

TKN= Total Kjeldahl Nitrogen

TP= Total Phosphorus

VCM= Vinyl Chloride Monomer

AT Plastics Inc. - Edmonton	1480-01-00	IR1	1/week	Composite	1/day	Composite	1/day	Composite	1/week	Composite
		IR2			1/day during periods of discharge	Grab	1/day during periods of discharge	Grab	1/day during periods of discharge	Grab
Celanese Canada Inc. Edmonton Petrochemical Manufacturing Plant	1349-01-04	IW1	1/week and prior to discharge	Composite	1/day and prior to discharge	Composite	1/day and prior to discharge	Composite		
Dow Chemical Canada Inc. Fort Saskatchewan Chemical Manufacturing Plant	236-00-20 237-00-14	IW2	1/week	Composite	1/day	Composite	1/week	Composite	1/day	Visual Inspection
		SS								
Degussa Canada Ltd. Gibbons Hydrogen Peroxide Manufacturing Plant	1034-01-03 95-IND-082	IW3	1/day	Composite	1/day	Composite				
Geon Canada Inc. Scotford Polyvinyl Chloride Plant	194-01-01	IW	1/week	Composite					1/day	Visual Inspection
		IW4			1/day	Composite				

BOD= Biochemical Oxygen Demand
COD= Chemical Oxygen Demand
F= Frequency
IR1= Industrial Runoff from Storm Sewers
IR2= Industrial Runoff from the SR Holding Pond
IW= Industrial Wastewater
IW1= Industrial Wastewater from the South Flume
IW2= Industrial Wastewater from the Liquid Effluent Pond
IW3= Industrial Wastewater from the Final Effluent Sump
IW4= Industrial Wastewater from the Effluent Retention Basins
O&O= Oil and Other Substances
SS= Sanitary Sewage
ST= Sample Type
TSS= Total Suspended Solids

AT Plastics Inc. - Edmonton	1480-01-00	IR1	ALT 1/month*	Composite or Grab	1/week	Composite	1/day	Composite	1/day	Totalizer
		IR2			1/day during periods of discharge	Grab	1/day during periods of discharge	Grab	1/day during periods of discharge	Estimate or Totalizer
Celanese Canada Inc. Edmonton Petrochemical Manufacturing Plant	1349-01-04	IW1	ALT (Rainbow trout) 1/month*	Composite or Grab			1/day and prior to discharge	Continuous	1/day and prior to discharge	Totalizer
Dow Chemical Canada Inc. Fort Saskatchewan Chemical Manufacturing Plant	236-00-19 237-00-00 93-WL-026 91-AL-067(F)	IW2	ALT 1/month*	Composite or Grab	1/day	Composite	1/day	Composite and Continuous	1/day	Totalizer
		SS								
Degussa Canada Ltd. Gibbons Hydrogen Peroxide Manufacturing Plant	1034-01-03 95-IND-062	IW3	ALT 1/month*	Composite or Grab	1/day	Composite	1/day	Composite	1/day	Totalizer
Geon Canada Inc. Scotford Polyvinyl Chloride Plant	194-01-01	IW			1/week	Composite	1/day per batch discharge	RG or Composite	1/day	totalizer
		IW4	ALT 1/month*	RG						

*= See Appendix for More Information on Toxicity Testing
ALT= Acute Lethality Tests
F= Frequency
IR1= Industrial Runoff from Storm Sewers
IR2= Industrial Runoff from the SR Holding Pond

IW= Industrial Wastewater
IW1= Industrial Wastewater from the South Flume
IW2= Industrial Wastewater from the Liquid Effluent Pond
IW3= Industrial Wastewater from the Final Effluent Sump
IW4= Industrial Wastewater from the Effluent Retention Basins

RG= Representative Grab
SS= Sanitary Sewage
ST= Sample Type

AT Plastics Inc. - Edmonton	1460-01-00	IR1	1/week	Composite	1/week	Visual Inspection	1/2 months	Composite	1/week	Composite
		IR2			1/day during periods of discharge	Visual Inspection			1/day during periods of discharge	Grab
Celanese Canada Inc. Edmonton Petrochemical Manufacturing Plant	1349-01-04	IW1	1/day and prior to discharge	Composite						
Dow Chemical Canada Inc. Fort Saskatchewan Chemical Manufacturing Plant	236-00-19 237-00-00 93-WL-026 91-AL-087(F)	IW2	1/day	Composite						
		SS								
Degussa Canada Ltd. Gibbons Hydrogen Peroxide Manufacturing Plant	1034-01-03 95-IND-062	IW3	1/week	Composite						
Geon Canada Inc. Scotford Polyvinyl Chloride Plant	194-01-01	IW	1/day	Composite	1/day	Visual Inspection				
		IW4								

Cr, Cu, Pb, Hg, Zn= Chromium, Copper, Lead, Mercury, and Zinc (total mg/L for each)
F= Frequency
FSA/F= Floating Solids or Visible Foam
IR1= Industrial Runoff from Storm Sewers
IR2= Industrial Runoff from the 5R Holding Pond
IW= Industrial Wastewater
IW1= Industrial Wastewater from the South Flume
IW2= Industrial Wastewater from the Liquid Effluent Pond
IW3= Industrial Wastewater from the Final Effluent Sump
IW4= Industrial Wastewater from the Effluent Retention Basins
SS= Sanitary Sewage
ST= Sample Type
TOC= Total Organic Carbon

Chemical Plants			Attention to Monitoring							
Facility	Approval #	Source	Toxicity Testing		Ammonia - Nitrogen		pH		Flow	
			F	ST	F	ST	F	ST	F	ST
AT Plastics Inc. - Edmonton	1480-01-00	IR1	ALT 1/month*	Composite or Grab	1/week	Composite	1/day	Composite	1/day	Totalizer
		IR2			1/day during periods of discharge	Grab	1/day during periods of discharge	Grab	1/day during periods of discharge	Estimate or Totalizer
Celanese Canada Inc. Edmonton Petrochemical Manufacturing Plant	1349-01-04	IW1	ALT (Rainbow trout) 1/month*	Composite or Grab			1/day and prior to discharge	Continuous	1/day and prior to discharge	Totalizer
Dow Chemical Canada Inc. Fort Saskatchewan Chemical Manufacturing Plant	236-00-19 237-00-00 93-WL-026 91-AL-087(F)	IW2	ALT 1/month*	Composite or Grab	1/day	Composite	1/day	Composite and Continuous	1/day	Totalizer
		SS								
Degussa Canada Ltd. Gibbons Hydrogen Peroxide Manufacturing Plant	1034-01-03 95-IND-062	IW3	ALT 1/month*	Composite or Grab	1/day	Composite	1/day	Composite	1/day	Totalizer
Geon Canada Inc. Scotford Polyvinyl Chloride Plant	194-01-01	IW			1/week	Composite	1/day per batch discharge	RG or Composite	1/day	totalizer
		IW4	ALT 1/month*	RG						

*= See Appendix for More Information on Toxicity Testing
ALT= Acute Lethality Tests
F= Frequency
IR1= Industrial Runoff from Storm Sewers
IR2= Industrial Runoff from the 5R Holding Pond

IW= Industrial Wastewater
IW1= Industrial Wastewater from the South Flume
IW2= Industrial Wastewater from the Liquid Effluent Pond
IW3= Industrial Wastewater from the Final Effluent Sump
IW4= Industrial Wastewater from the Effluent Retention Basins

RG= Representative Grab
SS= Sanitary Sewage
ST= Sample Type

Chemical Plants - Monitoring

Chemical Plants			Parameters to be Monitored							
Facility	Approval #	Source	TOC		FS/VF		Cr, Cu, Pb, Hg, Zn		Chlorine (free chlorine)	
			F	ST	F	ST	F	ST	F	ST
AT Plastics Inc. - Edmonton	1480-01-00	IR1	1/week	Composite	1/week	Visual Inspection	1/2 months	Comosite	1/week	Composite
		IR2			1/day during periods of discharge	Visual Inspection			1/day during periods of discharge	Grab
Celanese Canada Inc. Edmonton Petrochemical Manufacturing Plant	1349-01-04	IW1	1/day and prior to discharge	Composite						
Dow Chemical Canada Inc. Fort Saskatchewan Chemical Manufacturing Plant	236-00-19 237-00-00 93-WL-026 91-AL-087(F)	IW2	1/day	Composite						
		SS								
Degussa Canada Ltd. Gibbons Hydrogen Peroxide Manufacturing Plant	1034-01-03 95-IND-062	IW3	1/week	Composite						
Geon Canada Inc. Scotford Polyvinyl Chloride Plant	194-01-01	IW	1/day	Composite	1/day	Visual Inspection				
		IW4								

Cr, Cu, Pb, Hg, Zn= Chromium, Copper, Lead, Mercury, and Zinc (total mg/L for each)
F= Frequency
FS/VF= Floating Solids or Visible Foam
IR1= Industrial Runoff from Storm Sewers
IR2= Industrial Runoff from the 5R Holding Pond

IW= Industrial Wastewater
IW1= Industrial Wastewater from the South Flume
IW2= Industrial Wastewater from the Liquid Effluent Pond
IW3= Industrial Wastewater from the Final Effluent Sump
IW4= Industrial Wastewater from the Effluent Retention Basins

SS= Sanitary Sewage
ST= Sample Type
TOC= Total Organic Carbon

Chemical Plants - Monitoring

Chemical Plants											
Facility	Approval #	Source	Microtox		DOC		PP		RW	Total Kjeldahl Nitrogen	
			F	ST	F	ST	F	ST		F	ST
AT Plastics Inc. - Edmonton	1480-01-00	IR1									
		IR2									
Celanese Canada Inc. Edmonton Petrochemical Manufacturing Plant	1349-01-04	IW1	1/month*	Composite or Grab	1/week and prior to discharge	Composite	1/2 years	Grab	Will be Monitored		
Dow Chemical Canada Inc. Fort Saskatchewan Chemical Manufacturing Plant	236-00-19 237-00-00 93-WL-026 91-AL-087(F)	IW2								1/week	Composite
		SS									
Degussa Canada Ltd. Gibbons Hydrogen Peroxide Manufacturing Plant	1034-01-03 95-IND-062	IW3			1/week	Composite					
Geon Canada Inc. Scotford Polyvinyl Chloride Plant	194-01-01	IW									
		IW4									

*= See Appendix for More Information
DOC= Dissolved Organic Carbon
F= Frequency
IR1= Industrial Runoff from Storm Sewers
IR2= Industrial Runoff from the 5R Holding Pond

IW= Industrial Wastewater
IW1= Industrial Wastewater from the South Flume
IW2= Industrial Wastewater from the Liquid Effluent Pond
IW3= Industrial Wastewater from the Final Effluent Sump
IW4= Industrial Wastewater from the Effluent Retention Basins

PP= Priority Pollutants
RW= Receiving Water
SS= Sanitary Sewage
ST= Sample Type

Chemical Plants			Parameters to be Monitored											
Facility	Approval #	Source	Chloride		Phosphate		CBOD		Organic Nitrogen		Hydrogen Peroxide		Alkylbenzene	
			F	ST	F	ST	F	ST	F	ST	F	ST	F	ST
AT Plastics Inc. - Edmonton	1480-01-00	IR1												
		IR2												
Celanese Canada Inc. Edmonton Petrochemical Manufacturing Plant	1349-01-04	IW1												
Dow Chemical Canada Inc. Fort Saskatchewan Chemical Manufacturing Plant	236-00-19 237-00-00 93-WL-026 91-AL-087(F)	IW2	1/week	Composite	1/week	Composite								
		SS					1/week*	Grab						
Degussa Canada Ltd. Gibbons Hydrogen Peroxide Manufacturing Plant	1034-01-03 95-IND-062	IW3			1/day	Composite			1/week	Composite	1/week	Composite	1/year	Composite
Geon Canada Inc. Scotford Polyvinyl Chloride Plant	194-01-01	IW	1/week	Composite	1/week	Composite								
		IW4												

*= See Appendix for More Information

CBOD= Carbonaceous Biochemical Oxygen Demand

F= Frequency

IR1= Industrial Runoff from Storm Sewers

IR2= Industrial Runoff from the 5R Holding Pond

IW= Industrial Wastewater

IW1= Industrial Wastewater from the South Flume

IW2= Industrial Wastewater from the Liquid Effluent Pond

IW3= Industrial Wastewater from the Final Effluent Sump

IW4= Industrial Wastewater from the Effluent Retention Basins

SS= Sanitary Sewage

ST= Sample Type

AT Plastics Inc. - Edmonton	1480-01-00	IR1									
		IR2									
Celanese Canada Inc. Edmonton Petrochemical Manufacturing Plant	1349-01-04	IW1	1/month*	Composite or Grab	1/week and prior to discharge	Composite	1/2 years	Grab	Will be Monitored		
Dow Chemical Canada Inc. Fort Saskatchewan Chemical Manufacturing Plant	236-00-19 237-00-00 93-WL-026 91-AL-067(F)	IW2								1/week	Composite
		SS									
Degussa Canada Ltd. Gibbons Hydrogen Peroxide Manufacturing Plant	1034-01-03 95-IND-062	IW3			1/week	Composite					
Geon Canada Inc. Scotford Polyvinyl Chloride Plant	194-01-01	IW									
		IW4									

*= See Appendix for More Information
DOC= Dissolved Organic Carbon
F= Frequency
IR1= Industrial Runoff from Storm Sewers
IR2= Industrial Runoff from the 5R Holding Pond

IW= Industrial Wastewater
IW1= Industrial Wastewater from the South Flume
IW2= Industrial Wastewater from the Liquid Effluent Pond
IW3= Industrial Wastewater from the Final Effluent Sump
IW4= Industrial Wastewater from the Effluent Retention Basins

PP= Priority Pollutants
RW= Receiving Water
SS= Sanitary Sewage
ST= Sample Type

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
AT Plastics Inc. - Edmonton	1480-01-00	IR1												
		IR2												
Celanese Canada Inc. Edmonton Petrochemical Manufacturing Plant	1349-01-04	IW1												
Dow Chemical Canada Inc. Fort Saskatchewan Chemical Manufacturing Plant	236-00-19 237-00-00 93-WL-026 91-AL-067(F)	IW2	1/week	Composite	1/week	Composite								
		SS					1/week*	Grab						
Degussa Canada Ltd. Gibbons Hydrogen Peroxide Manufacturing Plant	1034-01-03 95-IND-062	IW3			1/day	Composite			1/week	Composite	1/week	Composite	1/year	Composite
Geon Canada Inc. Scotford Polyvinyl Chloride Plant	194-01-01	IW	1/week	Composite	1/week	Composite								
		IW4												

*= See Appendix for More Information
CBOD= Carbonaceous Biochemical Oxygen Demand
F= Frequency
IR1= Industrial Runoff from Storm Sewers
IR2= Industrial Runoff from the 5R Holding Pond

IW= Industrial Wastewater
IW1= Industrial Wastewater from the South Flume
IW2= Industrial Wastewater from the Liquid Effluent Pond
IW3= Industrial Wastewater from the Final Effluent Sump
IW4= Industrial Wastewater from the Effluent Retention Basins

SS= Sanitary Sewage
ST= Sample Type

AT Plastics Inc. - Edmonton	1480-01-00	IR1										
		IR2										
Celanese Canada Inc. Edmonton Petrochemical Manufacturing Plant	1349-01-04	IW1										
Dow Chemical Canada Inc. Fort Saskatchewan Chemical Manufacturing Plant	236-00-19 237-00-00 93-WL-026 91-AL-067(F)	IW2										
		SS										
Degussa Canada Ltd. Gibbons Hydrogen Peroxide Manufacturing Plant	1034-01-03 95-IND-062	IW3										
Geon Canada Inc. Scotford Polyvinyl Chloride Plant	194-01-01	IW	1/day	Composite	1/week	Composite						
		IW4										

F= Frequency
IR1= Industrial Runoff from Storm Sewers
IR2= Industrial Runoff from the 5R Holding Pond
IW= Industrial Wastewater
IW1= Industrial Wastewater from the South Flume
IW2= Industrial Wastewater from the Liquid Effluent Pond
IW3= Industrial Wastewater from the Final Effluent Sump
IW4= Industrial Wastewater from the Effluent Retention Basins
S,B,E,T= Styrene, Benzene, Ethylbenzene, Toluene
SS= Sanitary Sewage
ST= Sample Type
TDS= Total Dissolved Solids
VCM= Vinyl Chloride Monomer

AT Plastics Inc. - Edmonton	1480-01-00	IR1								
		IR2								
Celanese Canada Inc. Edmonton Petrochemical Manufacturing Plant	1349-01-04	IW1								
Dow Chemical Canada Inc. Fort Saskatchewan Chemical Manufacturing Plant	236-00-19 237-00-00 93-WL-026 91-AL-087(F)	IW2								
		SS								
Degussa Canada Ltd. Gibbons Hydrogen Peroxide Manufacturing Plant	1034-01-03 95-IND-062	IW3								
Geon Canada Inc. Scotford Polyvinyl Chloride Plant	194-01-01	IW								
		IW4								

F= Frequency

IR1= Industrial Runoff from Storm Sewers

IR2= Industrial Runoff from the 5R Holding Pond

IW= Industrial Wastewater

IW1= Industrial Wastewater from the South Flume

IW2= Industrial Wastewater from the Liquid Effluent Pond

IW3= Industrial Wastewater from the Final Effluent Sump

IW4= Industrial Wastewater from the Effluent Retention Basins

SS= Sanitary Sewage

ST= Sample Type

Chemical Plants			[illegible]									
Facility	Approval #	Source	VCM		TDS		S,B,E,T		Total Phosphorus		Dissolved Solids	
			F	ST	F	ST	F	ST	F	ST	F	ST
AT Plastics Inc. - Edmonton	1480-01-00	IR1										
		IR2										
Celanese Canada Inc. Edmonton Petrochemical Manufacturing Plant	1349-01-04	IW1										
Dow Chemical Canada Inc. Fort Saskatchewan Chemical Manufacturing Plant	236-00-19 237-00-00 93-WL-026 91-AL-087(F)	IW2										
		SS										
Degussa Canada Ltd. Gibbons Hydrogen Peroxide Manufacturing Plant	1034-01-03 95-IND-062	IW3										
Geon Canada Inc. Scotford Polyvinyl Chloride Plant	194-01-01	IW	1/day	Composite	1/week	Composite						
		IW4										

F= Frequency
IR1= Industrial Runoff from Storm Sewers
IR2= Industrial Runoff from the 5R Holding Pond
IW= Industrial Wastewater
IW1= Industrial Wastewater from the South Flume
IW2= Industrial Wastewater from the Liquid Effluent Pond
IW3= Industrial Wastewater from the Final Effluent Sump
IW4= Industrial Wastewater from the Effluent Retention Basins
S,B,E,T= Styrene, Benzene, Ethylbenzene, Toluene
SS= Sanitary Sewage
ST= Sample Type
TDS= Total Dissolved Solids
VCM= Vinyl Chloride Monomer

Chemical Plants			Analytical Results							
Facility	Approval #	Source	Total Phenolics		Arsenic		Mercury		Chromium	
			F	ST	F	ST	F	ST	F	ST
AT Plastics Inc. - Edmonton	1480-01-00	IR1								
		IR2								
Celanese Canada Inc. Edmonton Petrochemical Manufacturing Plant	1349-01-04	IW1								
Dow Chemical Canada Inc. Fort Saskatchewan Chemical Manufacturing Plant	236-00-19 237-00-00 93-WL-026	IW2								
	91-AL-087(F)	SS								
Degussa Canada Ltd. Gibbons Hydrogen Peroxide Manufacturing Plant	1034-01-03 95-IND-062	IW3								
Geon Canada Inc. Scotford Polyvinyl Chloride Plant	194-01-01	IW								
		IW4								

F= Frequency

IR1= Industrial Runoff from Storm Sewers

IR2= Industrial Runoff from the 5R Holding Pond

IW= Industrial Wastewater

IW1= Industrial Wastewater from the South Flume

IW2= Industrial Wastewater from the Liquid Effluent Pond

IW3= Industrial Wastewater from the Final Effluent Sump

IW4= Industrial Wastewater from the Effluent Retention Basins

SS= Sanitary Sewage

ST= Sample Type

Chemical Plant			Parameters Code Monitoring											
Facility	Approval #	Source	Zinc		Lead		Conductivity		Chlorate		[illegible]		Hexavalent Chromium	
			F	ST	F	ST	F	ST	F	ST	F	ST	F	ST
AT Plastics Inc. - Edmonton	1480-01-00	IR1												
		IR2												
Celanese Canada Inc. Edmonton Petrochemical Manufacturing Plant	1349-01-04	IW1												
Dow Chemical Canada Inc. Fort Saskatchewan Chemical Manufacturing Plant	236-00-19 237-00-00 93-WL-026 91-AL-087(F)	IW2												
		SS												
Degussa Canada Ltd. Gibbons Hydrogen Peroxide Manufacturing Plant	1034-01-03 95-IND-062	IW3												
Geon Canada Inc. Scotford Polyvinyl Chloride Plant	194-01-01	IW												
		IW4												

F= Frequency

IR1= Industrial Runoff from Storm Sewers

IR2= Industrial Runoff from the 5R Holding Pond

IW= Industrial Wastewater

IW1= Industrial Wastewater from the South Flume

IW2= Industrial Wastewater from the Liquid Effluent Pond

IW3= Industrial Wastewater from the Final Effluent Sump

IW4= Industrial Wastewater from the Effluent Retention Basins

SS= Sanitary Sewage

ST= Sample Type

Chemical Plants										
Facility	Approval #	Source	BOD		TSS		COD		O&O	
			F	ST	F	ST	F	ST	F	ST
Shell Chemicals Canada Ltd. Scotford Chemical Manufacturing Plant (styrene monomer) and Petrochemical Manufacturing Plant (ethylene glycol)	9767-01-06 95-IND-205	IW			Once per discharge	Composite			1/day	Visual Inspection
		IW&IR1	1/week	Composite	1/day	Composite	1/week	Composite	1/day	Visual Inspection
		IW1								
		SS1	1/month*	Composite	1/month*	Composite				
		SS2			3/week*	Composite				
NOVA Chemicals Ltd. Joffre Petrochemical and Chemical Manufacturing Plant	48309-00-00	IW&IR2	1/discharge	Grab	Once prior to Discharge	Grab	1/discharge	Grab	1/day	Visual Check
		IW&IR3			1/day*	Grab	1/day	Grab	1/day	Visual Check
Union Carbide Canada Inc. Prentiss Chemical Manufacturing Plant	70974-00-00	IW	1/week	Composite	1/day	Composite	1/week	Composite	1/day	Visual Check
		IR			Once prior to Discharge	Grab			Once prior to Discharge	Visual Check
Methanex Corporation Medicine Hat Methanol Plant	95-IND-238	N/A*								
Sterling Pulp Chemicals Ltd. Grande Prairie Sodium Chlorate Plant	10980-01-00	CW								
CXY Chemicals Canada Ltd. Bruderheim Chemical Manufacturing Plant	10346-01-04	IR			Prior to Release*	Grab				

*= See Appendix for More Information
BOD= Biochemical Oxygen Demand
COD= Chemical Oxygen Demand
CW= Cooling Water Blowdown
F= Frequency
IR= Industrial Runoff
IW&IR1= Industrial Wastewater and Industrial Runoff from the Ethylene Glycol Plant Biotreater
IW&IR2= Industrial Wastewater and Industrial Runoff from the Effluent Pond
IW&IR3= Industrial Wastewater and Industrial Runoff from the Retention Pond
IW= Industrial Wastewater
IW1= Industrial Wastewater from the Ethylene Glycol Plant
N/A= Not Applicable
O&O= Oil and Other Substances
SS1= Sanitary Sewage Prior to Treatment
SS2= Sanitary Sewage, Treated
ST= Sample Type
TSS= Total Suspended Solids

AT Plastics Inc. - Edmonton	1480-01-00	IR1												
		IR2												
Celanese Canada Inc. Edmonton Petrochemical Manufacturing Plant	1349-01-04	IW1												
Dow Chemical Canada Inc. Fort Saskatchewan Chemical Manufacturing Plant	236-00-19 237-00-00 93-WL-026 91-AL-087(F)	IW2												
		SS												
Degussa Canada Ltd. Gibbons Hydrogen Peroxide Manufacturing Plant	1034-01-03 95-IND-082	IW3												
Geon Canada Inc. Scotford Polyvinyl Chloride Plant	194-01-01	IW												
		IW4												

F= Frequency

IR1= Industrial Runoff from Storm Sewers

IR2= Industrial Runoff from the 5R Holding Pond

IW= Industrial Wastewater

IW1= Industrial Wastewater from the South Flume

IW2= Industrial Wastewater from the Liquid Effluent Pond

IW3= Industrial Wastewater from the Final Effluent Sump

IW4= Industrial Wastewater from the Effluent Retention Basins

SS= Sanitary Sewage

ST= Sample Type

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Shell Chemicals Canada Ltd. Scotford Chemical Manufacturing Plant (styrene monomer) and Petrochemical Manufacturing Plant (ethylene glycol)	9767-01-06 95-IND-205	IW			Once per discharge	Composite			1/day	Visual Inspection
		IW&IR1	1/week	Composite	1/day	Composite	1/week	Composite	1/day	Visual Inspection
		IW1								
		SS1	1/month*	Composite	1/month*	Composite				
		SS2			3/week*	Composite				
NOVA Chemicals Ltd. Joffre Petrochemical and Chemical Manufacturing Plant	48309-00-00	IW&IR2	1/discharge	Grab	Once prior to Discharge	Grab	1/discharge	Grab	1/day	Visual Check
		IW&IR3			1/day*	Grab	1/day	Grab	1/day	Visual Check
Union Carbide Canada Inc. Prentiss Chemical Manufacturing Plant	70974-00-00	IW	1/week	Composite	1/day	Composite	1/week	Composite	1/day	Visual Check
		IR			Once prior to Discharge	Grab			Once prior to Discharge	Visual Check
Methanex Corporation Medicine Hat Methanol Plant	95-IND-238	N/A*								
Sterling Pulp Chemicals Ltd. Grande Prairie Sodium Chlorate Plant	10980-01-00	CW								
CXY Chemicals Canada Ltd. Bruderheim Chemical Manufacturing Plant	10346-01-04	IR			Prior to Release*	Grab				

*= See Appendix for More Information
BOD= Biochemical Oxygen Demand
COD= Chemical Oxygen Demand
CW= Cooling Water Blowdown
F= Frequency
IR= Industrial Runoff
IW&IR1= Industrial Wastewater and Industrial Runoff from the Ethylene Glycol Plant Bioreactor
IW&IR2= Industrial Wastewater and Industrial Runoff from the Effluent Pond
IW&IR3= Industrial Wastewater and Industrial Runoff from the Retention Pond
IW= Industrial Wastewater
IW1= Industrial Wastewater from the Ethylene Glycol Plant
N/A= Not Applicable
O&O= Oil and Other Substances
SS1= Sanitary Sewage Prior to Treatment
SS2= Sanitary Sewage, Treated
ST= Sample Type
TSS= Total Suspended Solids

Shell Chemicals Canada Ltd. Scotford Chemical Manufacturing Plant (styrene monomer) and Petrochemical Manufacturing Plant (ethylene glycol)	9767-01-06 95-IND-205	IW	ALT 1/month*	Composite or Grab			Once per discharge	Composite	Once per discharge	Totalizer
							Continuous	Recorder	Continuous	Recorder
		IW&IR1	ALT 1/month*	Composite or Grab			1/day	Continuous	1/day	Totalizer
		IW1							1/day	Totalizer
		SS1								
		SS2								
NOVA Chemicals Ltd. Joffre Petrochemical and Chemical Manufacturing Plant	48309-00-00	IW&IR2	ALT and CT*	Grab			Continuous	Continuous	1/day	Totalizer
		IW&IR3					1/day*	Grab	1/day*	Flow Estimate
Union Carbide Canada Inc. Prentiss Chemical Manufacturing Plant	70974-00-00	IW	ALT on Rainbow trout 1/month*	Composite or Grab	1/day	Grab	Continuous	Continuous	1/day	Totalizer
		IR					Once prior to Discharge	Grab	1/day	Estimate
Methanex Corporation Medicine Hat Methanol Plant	95-IND-238	N/A*								
Sterling Pulp Chemicals Ltd. Grande Prairie Sodium Chlorate Plant	10980-01-00	CW					1/month	Composite	1/month	Estimate
CXY Chemicals Canada Ltd. Bruderheim Chemical Manufacturing Plant	10346-01-04	IR					Prior to Release*	Grab	1/month	Estimate

*= See Appendix for More Information

ALT= Acute Lethality Tests

CT= Chronic Toxicity

CW= Cooling Water Blowdown

F= Frequency

IW&IR1= Industrial Wastewater and Industrial Runoff from the Ethylene Glycol Plant Biotreater

IW&IR2= Industrial Wastewater and Industrial Runoff from the Effluent Pond

IW&IR3= Industrial Wastewater and Industrial Runoff from the Retention Pond

IW= Industrial Wastewater

IW1= Industrial Wastewater from the Ethylene Glycol Plant

N/A= Not Applicable

SR= Surface Runoff

SS1= Sanitary Sewage Prior to Treatment

SS2= Sanitary Sewage, Treated

ST= Sample Type

Shell Chemicals Canada Ltd. Scotford Chemical Manufacturing Plant (styrene monomer) and Petrochemical Manufacturing Plant (ethylene glycol)	9767-01-06 95-IND-205	IW	Once per discharge	Composite	1/day	Visual Inspection				
		IW&IR1	1/day	Grab and Continuous	1/day	Visual Inspection				
		IW1								
		SS1								
		SS2								
NOVA Chemicals Ltd. Joffre Petrochemical and Chemical Manufacturing Plant	48309-00-00	IW&IR2	Once prior to Discharge	Grab						
		IW&IR3	1/day	Grab						
Union Carbide Canada Inc. Prentiss Chemical Manufacturing Plant	70974-00-00	IW	1/day	Composite						
		IR	Once prior to Discharge	Grab	Once prior to Discharge	Visual Check				
Methanex Corporation Medicine Hat Methanol Plant	95-IND-238	N/A*								
Sterling Pulp Chemicals Ltd. Grande Prairie Sodium Chlorate Plant	10980-01-00	CW								
CXY Chemicals Canada Ltd. Bruderheim Chemical Manufacturing Plant	10346-01-04	IR								

*= See Appendix for More Information

Cr, Cu, Pb, Hg, Zn= Chromium, Copper, Lead, Mercury, and Zinc (total mg/L for each)

CW= Cooling Water Blowdown

F= Frequency

FS/VF= Floating Solids or Visible Foam

IW&IR1= Industrial Wastewater and Industrial Runoff from the Ethylene Glycol Plant Bioreactor

IW&IR2= Industrial Wastewater and Industrial Runoff from the Effluent Pond

IW&IR3= Industrial Wastewater and Industrial Runoff from the Retention Pond

IW= Industrial Wastewater

IW1= Industrial Wastewater from the Ethylene Glycol Plant

N/A= Not Applicable

SR= Surface Runoff

SS1= Sanitary Sewage Prior to Treatment

SS2= Sanitary Sewage, Treated

ST= Sample Type

TOC= Total Organic Carbon

Chemical Plants										
Facility	Account #	Source	Toxicity Testing		Ammonia Nitrogen		pH			
					F	ST	F	ST	F	ST
Shell Chemicals Canada Ltd. Scotford Chemical Manufacturing Plant (styrene monomer) and Petrochemical Manufacturing Plant (ethylene glycol)	9767-01-06 95-IND-205	IW	ALT 1/month*	Composite or Grab			Once per discharge	Composite	Once per discharge	Totalizer
							Continuous	Recorder	Continuous	Recorder
		IW&IR1	ALT 1/month*	Composite or Grab			1/day	Continuous	1/day	Totalizer
		IW1							1/day	Totalizer
		SS1								
		SS2								
NOVA Chemicals Ltd. Joffre Petrochemical and Chemical Manufacturing Plant	48309-00-00	IW&IR2	ALT and CT*	Grab			Continuous	Continuous	1/day	Totalizer
		IW&IR3					1/day*	Grab	1/day*	Flow Estimate
Union Carbide Canada Inc. Prentiss Chemical Manufacturing Plant	70974-00-00	IW	ALT on Rainbow trout 1/month*	Composite or Grab	1/day	Grab	Continuous	Continuous	1/day	Totalizer
		IR					Once prior to Discharge	Grab	1/day	Estimate
Methanex Corporation Medicine Hat Methanol Plant	95-IND-238	N/A*								
Sterling Pulp Chemicals Ltd. Grande Prairie Sodium Chlorate Plant	10980-01-00	CW					1/month	Composite	1/month	Estimate
CXY Chemicals Canada Ltd. Bruderheim Chemical Manufacturing Plant	10346-01-04	IR					Prior to Release*	Grab	1/month	Estimate

*= See Appendix for More Information
ALT= Acute Lethality Tests
CT= Chronic Toxicity
CW= Cooling Water Blowdown
F= Frequency
IW&IR1= Industrial Wastewater and Industrial Runoff from the Ethylene Glycol Plant Biotreater
IW&IR2= Industrial Wastewater and Industrial Runoff from the Effluent Pond
IW&IR3= Industrial Wastewater and Industrial Runoff from the Retention Pond
IW= Industrial Wastewater
IW1= Industrial Wastewater from the Ethylene Glycol Plant
N/A= Not Applicable
SR= Surface Runoff
SS1= Sanitary Sewage Prior to Treatment
SS2= Sanitary Sewage, Treated
ST= Sample Type

Chemical Plants			Parameters to be Monitored							
Facility	Approval #	Source	TOC		FS/VF		Cr, Cu, Pb, Hg, Zn		[illegible]	
			F	ST	F	ST	F	ST	F	ST
Shell Chemicals Canada Ltd. Scotford Chemical Manufacturing Plant (styrene monomer) and Petrochemical Manufacturing Plant (ethylene glycol)	9767-01-06 95-IND-205	IW	Once per discharge	Composite	1/day	Visual Inspection				
		IW&IR1	1/day	Grab and Continuous	1/day	Visual Inspection				
		IW1								
		SS1								
		SS2								
NOVA Chemicals Ltd. Joffre Petrochemical and Chemical Manufacturing Plant	48309-00-00	IW&IR2	Once prior to Discharge	Grab						
		IW&IR3	1/day	Grab						
Union Carbide Canada Inc. Prentiss Chemical Manufacturing Plant	70974-00-00	IW	1/day	Composite						
		IR	Once prior to Discharge	Grab	Once prior to Discharge	Visual Check				
Methanex Corporation Medicine Hat Methanol Plant	95-IND-238	N/A*								
Sterling Pulp Chemicals Ltd. Grande Prairie Sodium Chlorate Plant	10980-01-00	CW								
CXY Chemicals Canada Ltd. Bruderheim Chemical Manufacturing Plant	10346-01-04	IR								

*= See Appendix for More Information

Cr, Cu, Pb, Hg, Zn= Chromium, Copper, Lead, Mercury, and Zinc (total mg/L for each)

CW= Cooling Water Blowdown

F= Frequency

FS/VF= Floating Solids or Visible Foam

IW&IR1= Industrial Wastewater and Industrial Runoff from the Ethylene Glycol Plant Biotreater

IW&IR2= Industrial Wastewater and Industrial Runoff from the Effluent Pond

IW&IR3= Industrial Wastewater and Industrial Runoff from the Retention Pond

IW= Industrial Wastewater

IW1= Industrial Wastewater from the Ethylene Glycol Plant

N/A= Not Applicable

SR= Surface Runoff

SS1= Sanitary Sewage Prior to Treatment

SS2= Sanitary Sewage, Treated

ST= Sample Type

TOC= Total Organic Carbon

Chemical Plants			Parameters to be Monitored								
Facility	Approval	Source	Microtox		DOC		PP		RW	Total Residual Mercury	
			F	ST	F	ST	F	ST		F	ST
Shell Chemicals Canada Ltd. Scotford Chemical Manufacturing Plant (styrene monomer) and Petrochemical Manufacturing Plant (ethylene glycol)	9767-01-06 95-IND-205	IW								Once per discharge	Composite
		IW&IR1								1/day	Composite
		IW1									
		SS1									
		SS2									
NOVA Chemicals Ltd. Joffre Petrochemical and Chemical Manufacturing Plant	48309-00-00	IW&IR2			1/discharge	Grab					
		IW&IR3			1/day	Grab					
Union Carbide Canada Inc. Prentiss Chemical Manufacturing Plant	70974-00-00	IW			1/week	Composite				1/day	Composite
		IR									
Methanex Corporation Medicine Hat Methanol Plant	95-IND-238	N/A*									
Sterling Pulp Chemicals Ltd. Grande Prairie Sodium Chlorate Plant	10980-01-00	CW									
CXY Chemicals Canada Ltd. Bruderheim Chemical Manufacturing Plant	10346-01-04	IR									

*= See Appendix for More Information
CW= Cooling Water Blowdown
DOC= Dissolved Organic Carbon
F= Frequency
IW&IR1= Industrial Wastewater and Industrial Runoff from the Ethylene Glycol Plant Biotreater
IW&IR2= Industrial Wastewater and Industrial Runoff from the Effluent Pond
IW&IR3= Industrial Wastewater and Industrial Runoff from the Retention Pond
IW= Industrial Wastewater
IW1= Industrial Wastewater from the Ethylene Glycol Plant
N/A= Not Applicable
PP= Priority Pollutants
RW= Receiving Water
SR= Surface Runoff
SS1= Sanitary Sewage Prior to Treatment
SS2= Sanitary Sewage, Treated
ST= Sample Type

Chemical Plants			Parameters to be Monitored											
Facility	Approval #	Source	Chloride		Phosphate		CBOD		Organic Nitrogen		[illegible]		[illegible]	
			F	ST	F	ST	F	ST	F	ST	F	ST	F	ST
Shell Chemicals Canada Ltd. Scotford Chemical Manufacturing Plant (styrene monomer) and Petrochemical Manufacturing Plant (ethylene glycol)	9767-01-06 95-IND-205	IW												
		IW&IR1												
		IW1												
		SS1												
		SS2					3/week	Composite						
NOVA Chemicals Ltd. Joffre Petrochemical and Chemical Manufacturing Plant	48309-00-00	IW&IR2												
		IW&IR3												
Union Carbide Canada Inc. Prentiss Chemical Manufacturing Plant	70974-00-00	IW												
		IR												
Methanex Corporation Medicine Hat Methanol Plant	95-IND-238	N/A*												
Sterling Pulp Chemicals Ltd. Grande Prairie Sodium Chlorate Plant	10980-01-00	CW	1/month	Composite										
CXY Chemicals Canada Ltd. Bruderheim Chemical Manufacturing Plant	10346-01-04	IR	Prior to Release*	Grab										

*= See Appendix for More Information

CBOD= Carbonaceous Biochemical Oxygen Demand

CW= Cooling Water Blowdown

F= Frequency

IW&IR1= Industrial Wastewater and Industrial Runoff from the Ethylene Glycol Plant Biotreater

IW&IR2= Industrial Wastewater and Industrial Runoff from the Effluent Pond

IW&IR3= Industrial Wastewater and Industrial Runoff from the Retention Pond

IW= Industrial Wastewater

IW1= Industrial Wastewater from the Ethylene Glycol Plant

N/A= Not Applicable

SR= Surface Runoff

SS1= Sanitary Sewage Prior to Treatment

SS2= Sanitary Sewage, Treated

ST= Sample Type

Shell Chemicals Canada Ltd. Scotford Chemical Manufacturing Plant (styrene monomer) and Petrochemical Manufacturing Plant (ethylene glycol)	9767-01-06 95-IND-205	IW								Once per discharge	Composite
		IW&IR1								1/day	Composite
		IW1									
		SS1									
		SS2									
NOVA Chemicals Ltd. Joffre Petrochemical and Chemical Manufacturing Plant	48309-00-00	IW&IR2			1/discharge	Grab					
		IW&IR3			1/day	Grab					
Union Carbide Canada Inc. Prentiss Chemical Manufacturing Plant	70974-00-00	IW			1/week	Composite				1/day	Composite
		IR									
Methanex Corporation Medicine Hat Methanol Plant	95-IND-238	N/A*									
Sterling Pulp Chemicals Ltd. Grande Prairie Sodium Chlorate Plant	10980-01-00	CW									
CXY Chemicals Canada Ltd. Bruderheim Chemical Manufacturing Plant	10346-01-04	IR									

*= See Appendix for More Information
CW= Cooling Water Blowdown
DOC= Dissolved Organic Carbon
F= Frequency
IW&IR1= Industrial Wastewater and Industrial Runoff from the Ethylene Glycol Plant Bioreactor
IW&IR2= Industrial Wastewater and Industrial Runoff from the Effluent Pond
IW&IR3= Industrial Wastewater and Industrial Runoff from the Retention Pond
IW= Industrial Wastewater
IW1= Industrial Wastewater from the Ethylene Glycol Plant
N/A= Not Applicable
PP= Priority Pollutants
RW= Receiving Water
SR= Surface Runoff
SS1= Sanitary Sewage Prior to Treatment
SS2= Sanitary Sewage, Treated
ST= Sample Type

Shell Chemicals Canada Ltd. Scotford Chemical Manufacturing Plant (styrene monomer) and Petrochemical Manufacturing Plant (ethylene glycol)	9767-01-06 95-IND-205	IW												
		IW&IR1												
		IW1												
		SS1												
		SS2					3/week	Composite						
NOVA Chemicals Ltd. Joffre Petrochemical and Chemical Manufacturing Plant	48309-00-00	IW&IR2												
		IW&IR3												
Union Carbide Canada Inc. Prentiss Chemical Manufacturing Plant	70974-00-00	IW												
		IR												
Methanex Corporation Medicine Hat Methanol Plant	95-IND-238	N/A*												
Sterling Pulp Chemicals Ltd. Grande Prairie Sodium Chlorate Plant	10980-01-00	CW	1/month	Composite										
CXY Chemicals Canada Ltd. Bruderheim Chemical Manufacturing Plant	10346-01-04	IR	Prior to Release*	Grab										

*= See Appendix for More Information

CBOD= Carbonaceous Biochemical Oxygen Demand

CW= Cooling Water Blowdown

F= Frequency

IW&IR1= Industrial Wastewater and Industrial Runoff from the Ethylene Glycol Plant Bioreactor

IW&IR2= Industrial Wastewater and Industrial Runoff from the Effluent Pond

IW&IR3= Industrial Wastewater and Industrial Runoff from the Retention Pond

IW= Industrial Wastewater

IW1= Industrial Wastewater from the Ethylene Glycol Plant

N/A= Not Applicable

SR= Surface Runoff

SS1= Sanitary Sewage Prior to Treatment

SS2= Sanitary Sewage, Treated

ST= Sample Type

Shell Chemicals Canada Ltd. Scotford Chemical Manufacturing Plant (styrene monomer) and Petrochemical Manufacturing Plant (ethylene glycol)	9767-01-06 95-IND-205	IW					1/month	Grab				
		IW&IR1										
		IW1										
		SS1										
		SS2										
NOVA Chemicals Ltd. Joffre Petrochemical and Chemical Manufacturing Plant	48309-00-00	IW&IR2			1/discharge	Grab			Once prior to Discharge	Grab	1/discharge	Grab
		IW&IR3							1/day*	Grab		
Union Carbide Canada Inc. Prentiss Chemical Manufacturing Plant	70974-00-00	IW			1/day after commencement of PE	Composite			1/day	Composite		
		IR										
Methanex Corporation Medicine Hat Methanol Plant	95-IND-238	N/A*										
Sterling Pulp Chemicals Ltd. Grande Prairie Sodium Chlorate Plant	10980-01-00	CW										
CXY Chemicals Canada Ltd. Bruderheim Chemical Manufacturing Plant	10346-01-04	IR										

*= See Appendix for More Information
CW= Cooling Water Blowdown
F= Frequency
IW&IR1= Industrial Wastewater and Industrial Runoff from the Ethylene Glycol Plant Bioreactor
IW&IR2= Industrial Wastewater and Industrial Runoff from the Effluent Pond
IW&IR3= Industrial Wastewater and Industrial Runoff from the Retention Pond
IW= Industrial Wastewater
IW1= Industrial Wastewater from the Ethylene Glycol Plant
N/A= Not Applicable
PE= Polyethylene Production Unit
S,B,E,T= Styrene, Benzene, Ethylbenzene, Toluene
SR= Surface Runoff
SS1= Sanitary Sewage Prior to Treatment
SS2= Sanitary Sewage, Treated
ST= Sample Type
TDS= Total Dissolved Solids
VCM= Vinyl Chloride Monomer

Shell Chemicals Canada Ltd. Scotford Chemical Manufacturing Plant (styrene monomer) and Petrochemical Manufacturing Plant (ethylene glycol)	9767-01-06 95-IND-205	IW								
		IW&IR1								
		IW1								
		SS1								
		SS2								
NOVA Chemicals Ltd. Joffre Petrochemical and Chemical Manufacturing Plant	48309-00-00	IW&IR2	1/discharge	Grab	1/month	Grab	1/month	Grab	1/week	Grab
		IW&IR3								
Union Carbide Canada Inc. Prentiss Chemical Manufacturing Plant	70974-00-00	IW	1/month after commencement of PE	Grab	1/montin after commencement of PE	Grab	1/month after commencement of PE	Grab	1/month after commencement of PE	Grab
		IR								
Methanex Corporation Medicine Hat Methanol Plant	95-IND-238	N/A*								
Sterling Pulp Chemicals Ltd. Grande Prairie Sodium Chlorate Plant	10980-01-00	CW							1/month	Composite
CXY Chemicals Canada Ltd. Bruderheim Chemical Manufacturing Plant	10346-01-04	IR								

*= See Appendix for More Information

CW= Cooling Water Blowdown

F= Frequency

IW&IR1= Industrial Wastewater and Industrial Runoff from the Ethylene Glycol Plant Bioreactor

IW&IR2= Industrial Wastewater and Industrial Runoff from the Effluent Pond

IW&IR3= Industrial Wastewater and Industrial Runoff from the Retention Pond

IW= Industrial Wastewater

IW1= Industrial Wastewater from the Ethylene Glycol Plant

N/A= Not Applicable

PE= Polyethylene Production Unit

SR= Surface Runoff

SS1= Sanitary Sewage Prior to Treatment

SS2= Sanitary Sewage, Treated

ST= Sample Type

Chemical Plants			Parameters to be Monitored									
Facility	Approval #	Source	VCM		TDS		S,B,E,T		Total Phosphorus		Dicyclopentadiene	
			F	ST	F	ST	F	ST	F	ST	F	ST
Shell Chemicals Canada Ltd. Scotford Chemical Manufacturing Plant (styrene monomer) and Petrochemical Manufacturing Plant (ethylene glycol)	9767-01-06 95-IND-205	IW					1/month	Grab				
		IW&IR1										
		IW1										
		SS1										
		SS2										
NOVA Chemicals Ltd. Joffre Petrochemical and Chemical Manufacturing Plant	48309-00-00	IW&IR2			1/discharge	Grab			Once prior to Discharge	Grab	1/discharge	Grab
		IW&IR3							1/day*	Grab		
Union Carbide Canada Inc. Prentiss Chemical Manufacturing Plant	70974-00-00	IW			1/day after commencement of PE	Composite			1/day	Composite		
		IR										
Methanex Corporation Medicine Hat Methanol Plant	95-IND-238	N/A*										
Sterling Pulp Chemicals Ltd. Grande Prairie Sodium Chlorate Plant	10980-01-00	CW										
CXY Chemicals Canada Ltd. Bruderheim Chemical Manufacturing Plant	10346-01-04	IR										

*= See Appendix for More Information
CW= Cooling Water Blowdown
F= Frequency
IW&IR1= Industrial Wastewater and Industrial Runoff from the Ethylene Glycol Plant Biotreater
IW&IR2= Industrial Wastewater and Industrial Runoff from the Effluent Pond
IW&IR3= Industrial Wastewater and Industrial Runoff from the Retention Pond
IW= Industrial Wastewater
IW1= Industrial Wastewater from the Ethylene Glycol Plant
N/A= Not Applicable
PE= Polyethylene Production Unit
S,B,E,T= Styrene, Benzene, Ethylbenzene, Toluene
SR= Surface Runoff
SS1= Sanitary Sewage Prior to Treatment
SS2= Sanitary Sewage, Treated
ST= Sample Type
TDS= Total Dissolved Solids
VCM= Vinyl Chloride Monomer

Chemical Plants			Parameters of Interest							
Facility	Approval	Source	Total Phenolics		Arsenic		Mercury		Cr	
				ST	F	ST	F	ST		
Shell Chemicals Canada Ltd. Scotford Chemical Manufacturing Plant (styrene monomer) and Petrochemical Manufacturing Plant (ethylene glycol)	9767-01-06 95-IND-205	IW								
		IW&IR1								
		IW1								
		SS1								
		SS2								
NOVA Chemicals Ltd. Joffre Petrochemical and Chemical Manufacturing Plant	48309-00-00	IW&IR2	1/discharge	Grab	1/month	Grab	1/month	Grab	1/week	Grab
		IW&IR3								
Union Carbide Canada Inc. Prentiss Chemical Manufacturing Plant	70974-00-00	IW	1/month after commencement of PE	Grab	1/month after commencement of PE	Grab	1/month after commencement of PE	Grab	1/month after commencement of PE	Grab
		IR								
Methanex Corporation Medicine Hat Methanol Plant	95-IND-238	N/A*								
Starling Pulp Chemicals Ltd. Grande Prairie Sodium Chlorate Plant	10980-01-00	CW							1/month	Composite
CXY Chemicals Canada Ltd. Bruderheim Chemical Manufacturing Plant	10346-01-04	IR								

*= See Appendix for More Information

CW= Cooling Water Blowdown

F= Frequency

IW&IR1= Industrial Wastewater and Industrial Runoff from the Ethylene Glycol Plant Biotreater

IW&IR2= Industrial Wastewater and Industrial Runoff from the Effluent Pond

IW&IR3= Industrial Wastewater and Industrial Runoff from the Retenton Pond

IW= Industrial Wastewater

IW1= Industrial Wastewater from the Ethylene Glycol Plant

N/A= Not Applicable

PE= Polyethylene Production Unit

SR= Surface Runoff

SS1= Sanitary Sewage Prior to Treatment

SS2= Sanitary Sewage, Treated

ST= Sample Type

Chemical Plants - Monitoring

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Shell Chemicals Canada Ltd. Scotford Chemical Manufacturing Plant (styrene monomer) and Petrochemical Manufacturing Plant (ethylene glycol)	9767-01-06 95-IND-205	IW												
		IW&IR1												
		IW1												
		SS1												
		SS2												
NOVA Chemicals Ltd. Joffre Petrochemical and Chemical Manufacturing Plant	48309-00-00	IW&IR2	1/week	Grab										
		IW&IR3												
Union Carbide Canada Inc. Prentiss Chemical Manufacturing Plant	70974-00-00	IW	1/month after commencement of PE	Grab	1/month after commencement of PE	Grab								
		IR												
Methanex Corporation Medicine Hat Methanol Plant	95-IND-238	N/A*												
Sterling Pulp Chemicals Ltd. Grande Prairie Sodium Chlorate Plant	10980-01-00	CW					1/month	Composite						
CXY Chemicals Canada Ltd. Bruderheim Chemical Manufacturing Plant	10346-01-04	IR							Prior to Release*	Grab	Prior to Release*	Grab	Prior to Release*	Grab

*= See Appendix for More Information

CW= Cooling Water Blowdown

F= Frequency

IW&IR1= Industrial Wastewater and Industrial Runoff from the Ethylene Glycol Plant Biotreater

IW&IR2= Industrial Wastewater and Industrial Runoff from the Effluent Pond

IW&IR3= Industrial Wastewater and Industrial Runoff from the Retention Pond

IW= Industrial Wastewater

IW1= Industrial Wastewater from the Ethylene Glycol Plant

N/A= Not Applicable

PE= Polyethylene Production Unit

SR= Surface Runoff

SS1= Sanitary Sewage Prior to Treatment

SS2= Sanitary Sewage, Treated

ST= Sample Type

Shell Chemicals Canada Ltd. Scotford Chemical Manufacturing Plant (styrene monomer) and Petrochemical Manufacturing Plant (ethylene glycol)	9767-01-06 95-IND-205	IW												
		IW&IR1												
		IW1												
		SS1												
		SS2												
NOVA Chemicals Ltd. Joffre Petrochemical and Chemical Manufacturing Plant	48309-00-00	IW&IR2	1/week	Grab										
		IW&IR3												
Union Carbide Canada Inc. Prentiss Chemical Manufacturing Plant	70974-00-00	IW	1/month after commencement of PE	Grab	1/month after commencement of PE	Grab								
		IR												
Methanex Corporation Medicine Hat Methanol Plant	95-IND-238	N/A*												
Sterling Pulp Chemicals Ltd. Grande Prairie Sodium Chlorate Plant	10980-01-00	CW					1/month	Composite						
CXY Chemicals Canada Ltd. Bruderheim Chemical Manufacturing Plant	10346-01-04	IR							Prior to Release*	Grab	Prior to Release*	Grab	Prior to Release*	Grab

*= See Appendix for More Information

CW= Cooling Water Blowdown

F= Frequency

IW&IR1= Industrial Wastewater and Industrial Runoff from the Ethylene Glycol Plant Bioreactor

IW&IR2= Industrial Wastewater and Industrial Runoff from the Effluent Pond

IW&IR3= Industrial Wastewater and Industrial Runoff from the Retention Pond

IW= Industrial Wastewater

IW1= Industrial Wastewater from the Ethylene Glycol Plant

N/A= Not Applicable

PE= Polyethylene Production Unit

SR= Surface Runoff

SS1= Sanitary Sewage Prior to Treatment

SS2= Sanitary Sewage, Treated

ST= Sample Type

TAB 1.B COAL MINES - MOUNTAIN AND PRAIRIE

Coal mines are categorized based on their geographic location. There are five mountain, and seven prairie coal mines in Alberta.

Because the volume and nature of wastewater from a coal mine are generally unrelated to coal production quantities, wastewater limits are expressed in terms of concentration, rather than units of production.

Limits

Mountain Coal Mines

- All five of these mines have limits on Industrial Wastewater discharges.
- One has limits for Industrial Runoff.
- Two have limits on Sanitary Sewage releases.

Prairie Coal Mines

Five of these seven mines have limits associated with them.

- Five have limits for Industrial Wastewater releases.
- One has limits on Industrial Runoff.
- Two do not have limits because they direct wastewater to wastewater systems at different facilities.

Monitoring

Mountain Coal Mines

Industrial Wastewater facilities are made up of major ponds and minor ponds.

- All five of these mines monitor Industrial Wastewater from both major and minor ponds.
- Four of the mountain coal mines monitor Sanitary Sewage releases.

Prairie Coal Mines

- Five of the prairie coal mines monitor Industrial Wastewater releases.
- Two of the mines monitor Sanitary Sewage discharges.
- One of the prairie coal mines monitors Cooling Water discharges once pr year.
- One of these mines does not monitor discharges because it discharges to wastewater systems at a different facility.

Prairie Coal Mines - Limits

Luscar Ltd. Sheerness Coal Mine	11876-01-00	IW	50*	Not present in amounts sufficient to create a visible film or sheen	6.0-9.5		
Forestburg Collieries (1984) Ltd. Paintearth Coal Mine	11364-01-01	IW		Not present in amounts sufficient to create a visible film or sheen	6.0-9.5		Maximum 0.5 mL/L*
Manalta Coal Ltd Vesta Coal Mine	11607-01-01	IW		Not present in amounts sufficient to create a visible film or sheen	6.0-9.5	Not present except in trace amounts	Maximum 0.5 mL/L
Manalta Coal Ltd. Montgomery Coal Mine	10289-01-01	IW	50*		6.0-9.5		
		IR		Not present in amounts sufficient to create a visible film or sheen			
TransAlta Utilities Corporation Whitewood Coal Mine	11851-01-00	IW	50*	Not present in amounts sufficient to create a visible film or sheen	6.0-9.5	Not present except in trace amounts	
TransAlta Utilities Corporation Highvale Coal Mine	11187-01-00	N/A*					
Edmonton Power Inc. Genesee Coal Mine	10404-01-00	N/A*					

*= See Appendix for More Information
FS/VF= Floating Solids or Visible Foam
IR= Industrial Runoff from Shop/Office Runoff Pond
IW= Industrial Wastewater
MDL= Maximum Daily Limit
N/A= Not Applicable
NTBE= Never to be Exceeded
O&O= Oil and Other Substances
SeS= Settleable Solids
TSS= Total Suspended Solids

Luscar Ltd. Sheerness Coal Mine	11876-01-00	IW		1/week and Prior to Discharge	Grab				1/week and Prior to Discharge	N/A
Forestburg Collieries (1984) Ltd. Paintearth Coal Mine	11364-01-01	IW1							1/week	Grab
		SS		Once per Discharge	Grab	1/day	Volume Estimate			
Manalta Coal Ltd. Vesta Coal Mine	11607-01-01	IW							1/week and prior to release	N/A
Manalta Coal Ltd. Montgomery Coal Mine	10289-01-01	IW		1/week	Grab					
		SS		Once per Discharge	Grab	1/day	Volume Estimate			
TransAlta Utilities Corporation Whitewood Coal Mine	11851-01-00	IW	Summer	1/week	Grab			Summer	1/week	N/A
			Winter	1/month	Grab			Winter	1/month	N/A
TransAlta Utilities Corporation Highvale Coal Mine	11187-01-00	N/A*								
Edmonton Power Inc. Genesee Coal Mine	10404-01-00	IW								

*= See Appendix for More Information
CW= Cooling Water
F= Frequency
FS= Floating Solids
IW= Industrial Watewater
IW1= Industrial Wastewater during Normal precipitation events
N/A= Not Applicable
O&O= Oil and Other Substances
SS= Sanitary Sewage
ST= Sample Type
TSS= Total Suspended Solids
VF= Visible Foam

Prairie Coal Mines - Limits

Coal Mines - Prairie				Parameters and associated limits (All units are in mg/L unless otherwise specified)			
Facility	Approval #	Source	TSS MDL	O&O	pH (units) NTBE	FS/VF NTBE	SeS
Luscar Ltd. Sheerness Coal Mine	11876-01-00	IW	50*	Not present in amounts sufficient to create a visible film or sheen	6.0-9.5		
Forestburg Collieries (1984) Ltd. Paintearth Coal Mine	11364-01-01	IW		Not present in amounts sufficient to create a visible film or sheen	6.0-9.5		Maximum 0.5 mL/L*
Manalta Coal Ltd Vesta Coal Mine	11607-01-01	IW		Not present in amounts sufficient to create a visible film or sheen	6.0-9.5	Not present except in trace amounts	Maximum 0.5 mL/L
Manalta Coal Ltd. Montgomery Coal Mine	10289-01-01	IW	50*		6.0-9.5		
		IR		Not present in amounts sufficient to create a visible film or sheen			
TransAlta Utilities Corporation Whitewood Coal Mine	11851-01-00	IW	50*	Not present in amounts sufficient to create a visible film or sheen	6.0-9.5	Not present except in trace amounts	
TransAlta Utilities Corporation Highvale Coal Mine	11187-01-00	N/A*					
Edmonton Power Inc. Genesee Coal Mine	10404-01-00	N/A*					

*= See Appendix for More Information
FS/VF= Floating Solids or Visible Foam
IR= Industrial Runoff from Shop/Office Runoff Pond
IW= Industrial Wastewater
MDL= Maximum Daily Limit
N/A= Not Applicable
NTBE= Never to be Exceeded
O&O= Oil and Other Substances
SeS= Settleable Solids
TSS= Total Suspended Solids

Coal Mines - Prairie			Parameters to be Monitored							
Facility	Approval #	Source	TSS			Flow		Visual(FS,VF,O&O)		
			Time Period	F	ST	F	ST	Time Period	F	ST
Luscar Ltd. Sheerness Coal Mine	11876-01-00	IW		1/week and Prior to Discharge	Grab				1/week and Prior to Discharge	N/A
Forestburg Collieries (1984) Ltd. Paintearth Coal Mine	11364-01-01	IW1							1/week	Grab
		SS		Once per Discharge	Grab	1/day	Volume Estimate			
Manalta Coal Ltd. Vesta Coal Mine	11607-01-01	IW							1/week and prior to release	N/A
Manalta Coal Ltd. Montgomery Coal Mine	10289-01-01	IW		1/week	Grab					
		SS		Once per Discharge	Grab	1/day	Volume Estimate			
TransAlta Utilities Corporation Whitewood Coal Mine	11851-01-00	IW	Summer	1/week	Grab			Summer	1/week	N/A
			Winter	1/month	Grab			Winter	1/month	N/A
TransAlta Utilities Corporation Highvale Coal Mine	11187-01-00	N/A*								
Edmonton Power Inc Genesee Coal Mine	10404-01-00	IW								

*= See Appendix for More Information
CW= Cooling Water
F= Frequency
FS= Floating Solids
IW= Industrial Watewater
IW1= Industrial Wastewater during Normal precipitation events
N/A= Not Applicable
O&O= Oil and Other Substances
SS= Sanitary Sewage
ST= Sample Type
TSS= Total Suspended Solids
VF= Visible Foam

Coal Mines			Parameters Monitored							
Facility	Approval #	Source	pH			Once a year	SeS		BOD	
			Time Period	F	ST	Concentration*	F	ST	F	ST
Luscar Ltd. Sheerness Coal Mine	11876-01-00	IW		1/week and Prior to Discharge	Grab	Analyzed yearly*				
Forestburg Collieries (1984) Ltd. Paintearth Coal Mine	11364-01-01	IW1		1/week and Prior to Discharge	Grab		1/week and Prior to Discharge	Grab		
		SS							Once per Discharge	Grab
Manalta Coal Ltd. Vesta Coal Mine	11607-01-01	IW		1/week and prior to release	Grab	Settling Ponds Analyzed Yearly*	1/week and Prior to release	Grab		
Manalta Coal Ltd. Montgomery Coal Mine	10289-01-01	IW		1/week	Grab					
		SS							Once per Discharge	Grab
TransAlta Utilities Corporation Whitewood Coal Mine	11851-01-00	IW	Summer	1/week	Grab	Each discharge stream will be analyzed yearly*				
			Winter	1/month	Grab					
TransAlta Utilities Corporation Highvale Coal Mine	11187-01-00	N/A*								
Edmonton Power Inc. Genesee Coal Mine	10404-01-00	CW				Analyzed yearly*				

*= See Appendix for More Information
BOD= Biochemical Oxygen Demand
CW= Cooling Water
F= Frequency
IW= Industrial Watewater
IW1= Industrial Wastewater during Normal precipitation events
N/A= Not Applicable
SeS= Settleable Solids
SS= Sanitary Sewage
ST= Sample Type

Coal Mines - Mountain			Parameters and Associated Limits (All units are in mg/L unless otherwise specified)						
Facility	Approval #	Source	TSS MDA	TSS MDL	ALT (Rainbow trout)	O&O	pH (units) NTBE	FS/VF NTBE	BOD NTBE
Luscar Ltd. Gregg River Coal Mine and Processing Plant	11903-01-10	IW	50*	350*	50% or greater survival in 100% industrial wastewater sample	Not present in amounts sufficient to create a visible film or sheen	6.0-9.5	None except in trace amounts	
		SS		25					25
Cardinal River Coals Ltd. Cardinal River Coal Mine	11769-00-08	IW	50*	350*		Not present in amounts sufficient to create a visible film or sheen	6.0-9.5		
		SS		25*					25
Obed Mountain Coal Ltd. Obed Mountain Coal Mine	10084-00-02	IW	50*	350*		Not present in amounts sufficient to create a visible film or sheen	6.0-9.5		
Luscar Sterco (1977) Ltd. Luscar Sterco (Coal Valley) Mine	1915-00-05	IW	50*	350*		Not present in amounts sufficient to create a visible film or sheen	6.0-9.5		
Smoky River Coal Limited Smoky River Coal Mine	11933-00-05	IW	50*	350*		Not present in amounts sufficient to create a visible film or sheen	6.0-9.5		
		SS		25*					25

*= See Appendix for Special Conditions
ALT= Acute Lethality Test
BOD= Biochemical Oxygen Demand
FS/VF= Floating Solids or Visible Foam
IR= Industrial Runoff
IW= Industrial Wastewater
MDA= Maximum Daily Average (for any month)
MDL= Maximum Daily Limit
NTBE= Never to be Exceeded
O&O= Oil and Other Substances
SS= Sanitary Sewage
TSS= Total Suspended Solids

Luscar Ltd. Sheerness Coal Mine	11876-01-00	IW		1/week and Prior to Discharge	Grab	Analyzed yearly*				
Forestburg Collieries (1984) Ltd. Paintearth Coal Mine	11364-01-01	IW1		1/week and Prior to Discharge	Grab		1/week and Prior to Discharge	Grab		
		SS							Once per Discharge	Grab
Manalta Coal Ltd. Vesta Coal Mine	11607-01-01	IW		1/week and prior to release	Grab	Settling Ponds Analyzed Yearly*	1/week and Prior to release	Grab		
Manalta Coal Ltd. Montgomery Coal Mine	10289-01-01	IW		1/week	Grab					
		SS							Once per Discharge	Grab
TransAlta Utilities Corporation Whitewood Coal Mine	11851-01-00	IW	Summer	1/week	Grab	Each discharge stream will be analyzed yearly*				
			Winter	1/month	Grab					
TransAlta Utilities Corporation Highvale Coal Mine	11187-01-00	N/A*								
Edmonton Power Inc. Genesee Coal Mine	10404-01-00	CW				Analyzed yearly*				

*= See Appendix for More Information
BOD= Biochemical Oxygen Demand
CW= Cooling Water
F= Frequency
IW= Industrial Watewater

IW1= Industrial Wastewater during Normal precipitation events
N/A= Not Applicable
SoS= Settleable Solids
SS= Sanitary Sewage
ST= Sample Type

Mountain Coal Mines - Limits

Luscar Ltd. Gregg River Coal Mine and Processing Plant	11903-01-10	IW	50*	350*	50% or greater survival in 100% industrial wastewater sample	Not present in amounts sufficient to create a visible film or sheen	6.0-9.5	None except in trace amounts	
		SS		25					25
Cardinal River Coals Ltd. Cardinal River Coal Mine	11769-00-08	IW	50*	350*		Not present in amounts sufficient to create a visible film or sheen	6.0-9.5		
		SS		25*					25
Obed Mountain Coal Ltd. Obed Mountain Coal Mine	10084-00-02	IW	50*	350*		Not present in amounts sufficient to create a visible film or sheen	6.0-9.5		
Luscar Sterco (1977) Ltd. Luscar Sterco (Coal Valley) Mine	1915-00-05	IW	50*	350*		Not present in amounts sufficient to create a visible film or sheen	6.0-9.5		
Smoky River Coal Limited Smoky River Coal Mine	11933-00-05	IW	50*	350*		Not present in amounts sufficient to create a visible film or sheen	6.0-9.5		
		SS		25*					25

*= See Appendix for Special Conditions
ALT= Acute Lethality Test
BOD= Biochemical Oxygen Demand
FS/VF= Floating Solids or Visible Foam
IR= Industrial Runoff
IW= Industrial Wastewater
MDA= Maximum Daily Average (for any month)
MDL= Maximum Daily Limit
NTBE= Never to be Exceeded
O&O= Oil and Other Substances
SS= Sanitary Sewage
TSS= Total Suspended Solids

Luscar Ltd. Gregg River Coal Mine and Processing Plant	11903-01-09	MP		1/week and when turbidity >50 NTU	Grab	Summer	3/week	Grab			Summer	3/week	Grab
						Winter	1/week	Grab			Winter	1/week	Grab
		MIP		1/week	Grab							1/week	Grab
Cardinal River Coals Ltd. Cardinal River Coal Mine	11789-00-08	SS		1/week	Grab								
		MP	Summer	1/week and when turbidity >50 NTU	Grab	Summer	3/week	Grab	1/month	Grab		1/week	Grab
			Winter	1/week	Grab								
		MIP		1/week	Grab				1/month	Grab		1/week	Grab
		SS		1/week	Grab								
Obed Mountain Coal Ltd. Obed Mountain Coal Mine	10084-00-02	MP	Summer	1/week and when turbidity >50 NTU	Grab	Summer	3/week	Grab	1/month	Grab		1/week	Grab
			Winter	1/week	Grab								
		MIP		1/week	Grab				1/month	Grab		1/week	Grab
		SS		Prior to release	Grab								
Luscar Sterco (1977) Ltd. Luscar Sterco (Coal Valley) Mine	1915-00-05	MP	Summer	1/week and when turbidity >50 NTU	Grab	Summer	3/week	Grab	1/month	Grab		1/week	Grab
			Winter	1/week	Grab								
		MIP		1/week	Grab				1/month	Grab		1/week	Grab
		SS		1/week	Grab								
Smoky River Coal Limited Smoky River Coal Mine	11933-00-05	MP	Summer	1/week and when turbidity >50 NTU	Grab	Summer	3/week	Grab	1/month	Grab		1/week	Grab
			Winter	1/week	Grab								
		MIP		1/week	Grab				1/month	Grab		1/week	Grab
		SS		1/week	Grab								

F= Frequency
MIP= Minor Ponds
MP= Major Ponds

NTU= Nephelometric Turbidity Unit
SS= Sanitary Sewage
ST= Sample Type
TSS= Total Suspended Solids

Coal Mines - Mountain													
Facility	Approval	Code	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Luscar Ltd. Gregg River Coal Mine and Processing Plant	11903-01-09	MP		1/week and when turbidity >50 NTU	Grab	Summer	3/week	Grab			Summer	3/week	Grab
						Winter	1/week	Grab			Winter	1/week	Grab
		MiP		1/week	Grab							1/week	Grab
Cardinal River Coals Ltd. Cardinal River Coal Mine	11769-00-08	SS		1/week	Grab								
		MP	Summer	1/week and when turbidity >50 NTU	Grab	Summer	3/week	Grab	1/month	Grab		1/week	Grab
			Winter	1/week	Grab								
		MiP		1/week	Grab				1/month	Grab		1/week	Grab
		SS		1/week	Grab								
Obed Mountain Coal Ltd. Obed Mountain Coal Mine	10084-00-02	MP	Summer	1/week and when turbidity >50 NTU	Grab	Summer	3/week	Grab	1/month	Grab		1/week	Grab
			Winter	1/week	Grab								
		MiP		1/week	Grab				1/month	Grab		1/week	Grab
		SS		Prior to release	Grab								
Luscar Sterco (1977) Ltd. Luscar Sterco (Coal Valley) Mine	1915-00-05	MP	Summer	1/week and when turbidity >50 NTU	Grab	Summer	3/week	Grab	1/month	Grab		1/week	Grab
			Winter	1/week	Grab								
		MiP		1/week	Grab				1/month	Grab		1/week	Grab
		SS		1/week	Grab								
Smoky River Coal Limited Smoky River Coal Mine	11933-00-05	MP	Summer	1/week and when turbidity >50 NTU	Grab	Summer	3/week	Grab	1/month	Grab		1/week	Grab
			Winter	1/week	Grab								
		MiP		1/week	Grab				1/month	Grab		1/week	Grab
		SS		1/week	Grab								

F= Frequency
MiP= Minor Ponds
MP= Major Ponds

NTU= Nephelometric Turbidity Unit
SS= Sanitary Sewage
ST= Sample Type
TSS= Total Suspended Solids

Coal Mines - Mountain			Parameters to be Monitored											
Facility	Approval #	Source	Flow			BOD		Nitrate-Nitrogen		RW	Iron		Visual (FS, VF, O&O)	
			Time Period	F	ST	F	ST	F	ST		F	ST	F	ST
Luscar Ltd. Gregg River Coal Mine and Processing Plant	11903-01-09	MP	Summer	3/week	Weir			1/week	Grab	Must be Monitored			1/day	N/A
			Winter	1/week	Weir									
		MiP						1/month	Grab				1/week	N/A
Cardinal River Coals Ltd. Cardinal River Coal Mine	11769-00-08					1/week	Grab							
		MP									1/month	Grab	1/week	N/A
		MiP									1/month	Grab	1/week	N/A
		SS				1/week	Grab							
Obed Mountain Coal Ltd. Obed Mountain Coal Mine	10084-00-02	MP								Must be Monitored*	1/month	Grab	1/week	N/A
		MiP									1/month	Grab	1/week	N/A
		SS				Prior to release	Grab							
Luscar Sterco (1977) Ltd. Luscar Sterco (Coal Valley) Mine	1915-00-05	MP								Must be Monitored*	1/month	Grab	1/week	N/A
		MiP									1/month	Grab	1/week	N/A
		SS				1/week	Grab							
Smoky River Coal Limited Smoky River Coal Mine	11933-00-05	MP								Must be Monitored*	1/month	Grab	1/week	N/A
		MiP									1/month	Grab	1/Week	N/A
		SS				1/week	Grab							

*= See Appendix for More Information
BOD= Biochemical Oxygen Demand
F= Frequency
FS= Floating Solids
MiP= Minor Ponds
MP= Major Ponds
N/A= Not Applicable
O&O= Oil and Other Substances
RW= Receiving Water
SS= Sanitary Sewage
ST= Sample Type
VF= Visible Foam

Luscar Ltd. Gregg River Coal Mine and Processing Plant	11903-01-09	MP	Summer Winter	3/week 1/week	Weir Weir			1/week	Grab	Must be Monitored			1/day	N/A
		MiP						1/month	Grab				1/week	N/A
						1/week	Grab							
Cardinal River Coals Ltd. Cardinal River Coal Mine	11789-00-08	MP									1/month	Grab	1/week	N/A
		MiP									1/month	Grab	1/week	N/A
		SS				1/week	Grab							
Obed Mountain Coal Ltd. Obed Mountain Coal Mine	10084-00-02	MP								Must be Monitored*	1/month	Grab	1/week	N/A
		MiP									1/month	Grab	1/week	N/A
		SS				Prior to release	Grab							
Luscar Sterco (1977) Ltd. Luscar Sterco (Coal Valley) Mine	1915-00-05	MP								Must be Monitored*	1/month	Grab	1/week	N/A
		MiP									1/month	Grab	1/week	N/A
		SS				1/week	Grab							
Smoky River Coal Limited Smoky River Coal Mine	11933-00-05	MP								Must be Monitored*	1/month	Grab	1/week	N/A
		MiP									1/month	Grab	1/Week	N/A
		SS				1/week	Grab							

*= See Appendix for More Information
BOD= Biochemical Oxygen Demand
F= Frequency
FS= Floating Solids
MiP= Minor Ponds
MP= Major Ponds
N/A= Not Applicable
O&O= Oil and Other Substances
RW= Receiving Water
SS= Sanitary Sewage
ST= Sample Type
VF= Visible Foam

TAB 1.C FERTILIZER MANUFACTURING PLANTS

There are currently four fertilizer manufacturing facilities in Alberta that release wastewater effluent to the environment. Two of the fertilizer plants release wastewater to the North Saskatchewan River, one releases to 12 Mile Coulee and another plant discharges to the South Saskatchewan River.

Three of the five facilities have wastewater limits. One uses wastewater for irrigation, and the other plant discharges to another facility's wastewater treatment system.

Limits

- One of the fertilizer manufacturing plants has limits associated with Industrial Wastewater and Industrial Runoff releases.
- One plant has limits for Industrial Runoff.

Monitoring

- All four of the plants monitor Industrial Wastewater.
- One of the plants monitors Industrial Runoff.

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Agrium Products Inc. Fort Saskatchewan Fertilizer Manufacturing Plant	20477-00-00	N/A*	All Discharges Directed to Sheritt International Effluent Management System										
Agrium Products Inc. Redwater Fertilizer Manufacturing Plant	210-01-05	IW&IR	Current	250	460	Current	240	500	Current	50	250		6.0-9.5
			Oct. 1, 1999	115	250	Oct. 1, 1999	145	375	Oct. 1, 1999	30	125		
			Oct. 1, 2002	50	125	Oct. 1, 2002	75	250	Oct. 1, 2002	17	65		
Agrium Products Inc. Carseland Fertilizer Manufacturing Plant	1560-01-00	N/A*											
Canadian Fertilizers Limited Medicine Hat Fertilizer Manufacturing Plant	1336-00-07	IW	Current	170	700					80	300	220	6.0-9.5
			Jan. 1, 2000	170	400								
			Sept. 1, 2000	105	250								
			Sept. 1, 2005	40	100								
Sherritt International Corporation Fort Saskatchewan Fertilizer Manufacturing & Metal Manufacturing Plant	211-01-00	IW&IR	Current	505	1010				Current	284	852		6.0-9.5
			Sept. 1, 2000	280	580				Sept. 1, 2000	70	335		
			Sept. 1, 2005	60	150								

*= See Appendix for More Information
IW= Industrial Wastewater
IW&IR= Industrial Wastewater and Industrial Runoff

MDA= Maximum Daily Average (for any month)
MDL= Maximum Daily Limit
N/A= Not Applicable

NTBE= Never to be Exceeded
ODA= One Day Amount (may be exceeded one day a month only)

Fertilizer Manufacturing Plants			Parameters and Associated Limits (All Units in kg/day, unless otherwise specified)										
Facility	Approval #	Source	Ammonia Nitrogen			Nitrate Nitrogen			Organic Nitrogen				pH (unit)
			Effective Date	MDA	MDL	Effective Date	MDA	MDL	Effective Date	MDA	MDL	ODA	NTBE
Agrium Products Inc. Fort Saskatchewan Fertilizer Manufacturing Plant	20477-00-00	N/A*	All Discharges Directed to Sheritt International Effluent Management System										
Agrium Products Inc. Redwater Fertilizer Manufacturing Plant	210-01-05	IW&IR	Current	250	480	Current	240	500	Current	50	250		6.0-9.5
			Oct. 1, 1999	115	250	Oct. 1, 1999	145	375	Oct. 1, 1999	30	125		
			Oct. 1, 2002	50	125	Oct. 1, 2002	75	250	Oct. 1, 2002	17	65		
Agrium Products Inc. Carseland Fertilizer Manufacturing Plant	1580-01-00	N/A*											
Canadian Fertilizers Limited Medicine Hat Fertilizer Manufacturing Plant	1336-00-07	IW	Current	170	700					80	300	220	6.0-9.5
			Jan. 1, 2000	170	400								
			Sept. 1, 2000	105	250								
			Sept. 1, 2005	40	100								
Sherritt International Corporation Fort Saskatchewan Fertilizer Manufacturing & Metal Manufacturing Plant	211-01-00	IW&IR	Current	505	1010				Current	284	852		6.0-9.5
			Sept. 1, 2000	280	580				Sept. 1, 2000	70	335		
			Sept. 1, 2005	60	150								

*= See Appendix for More Information
IW= Industrial Wastewater
IW&IR= Industrial Wastewater and Industrial Runoff
MDA= Maximum Daily Average (for any month)
MDL= Maximum Daily Limit
N/A= Not Applicable
NTBE= Never to be Exceeded
ODA= One Day Amount (may be exceeded one day a month only)

Fertilizer Manufacturing Plants			Parameters and Associated Limits (All units in kg/day, unless otherwise specified)										
Facility	Approval #	Source	Phosphate				TSS				ALT	FS&VF	O&O
			Effective Date	MDA	MDL	ODA	Effective Date	MDA	MDL	ODA	(Relative Value)		
Agrium Products Inc. Fort Saskatchewan Fertilizer Manufacturing Plant	20477-00-00	N/A*											
Agrium Products Inc. Redwater Fertilizer Manufacturing Plant	210-01-05	IW&IR	Current	60	200		Current	300	800		50% or greater survival in 100% industrial wastewater sample	Not present except in trace amounts	Not present in amounts sufficient to create a visible film or sheen
			Oct. 1, 1999	45	140		Oct. 1, 1999	235	650				
			Oct. 1, 2002	35	90		Oct. 1, 2002	150	500				
Agrium Products Inc. Carseland Fertilizer Manufacturing Plant	1580-01-00	N/A*											
Canadian Fertilizers Limited Medicine Hat Fertilizer Manufacturing Plant	1336-00-07	IW		20	100	50		150	500	350			Not present in amounts sufficient to create a visible film or sheen, or other than trace amounts
Sherritt International Corporation Fort Saskatchewan Fertilizer Manufacturing & Metal Manufacturing Plant	211-01-00	IW&IR	Current	44	132		Current	529	1587		50% or greater survival in 100% industrial wastewater sample	Not present except in trace amounts	Not present in amounts sufficient to create a visible film or sheen
			Sept. 1, 2000	30	60		Sept. 1, 2000	200	700				

*= See Appendix for More Information
ALT= Acute Lethality Test
FS&VF= Floating Solids and Visible Foam

IW= Industrial Wastewater
IW&IR= Industrial Wastewater and Industrial Runoff
MDA= Maximum Daily Average (for any month)
MDL= Maximum Daily Limit

N/A= Not Applicable
O&O= Oil and Other Substances
ODA= One Day Amount (may be exceeded one day a month only)
TSS= Total Suspended Solids

Fertilizer Manufacturing Plants			Parameters to be Monitored									
Facility	Approval #	Source	Phosphate		TSS		Ammonia Nitrogen		TKN		Nitrate Nitrogen	
			F	ST	F	ST	F	ST	F	ST	F	ST
Agrium Products Inc. Fort Saskatchewan Fertilizer Manufacturing Plant	20477-00-00	IW	1/week	Composite	1/week	Composite	1/week	Composite	1/week	Composite	1/week	Composite
Agrium Products Inc. Redwater Fertilizer Manufacturing Plant	210-01-05	IW	1/day and prior to release	Composite	1/day and prior to release	Composite	1/day and prior to release	Composite			1/day and prior to release	Composite
		IR	Prior to & during discharge to settling pond	Grab	Prior to & during discharge to settling pond	Grab	Prior to & during discharge to settling pond	Grab			Prior to & during discharge to settling pond	Grab
Agrium Products Inc. Carseland Fertilizer Manufacturing Plant	1580-01-00	IW1			1/month*	RG	1/month*	RG			1/month*	RG
		IW2										
Canadian Fertilizers Limited Medicine Hat Fertilizer Manufacturing Plant	1336-00-07	IW	3/week	Composite	3/week	Composite	1/day	Composite			3/week	Composite
Sherritt International Corporation Fort Saskatchewan Fertilizer Manufacturing & Metal Manufacturing Plant	211-01- 00	IW&IR	1/day	Composite	1/day	Composite	1/day	Composite	1/day	Composite	1/day	Composite

*= See Appendix for More Frequency Information
F= Frequency
IR= Industrial Runoff
IW= Industrial Wastewater
IW1= Industrial Wastewater from Irrigation and Evaporation Ponds
IW2= Industrial Wastewater from Stormwater Ponds
RG= Representative Grab
ST= Sample Type
TKN= Total Kjeldahl Nitrogen
TSS= Total Suspended Solids

Fertilizer Manufacturing Plants - Limits

Agrium Products Inc. Fort Saskatchewan Fertilizer Manufacturing Plant	20477-00-00	N/A*											
Agrium Products Inc. Redwater Fertilizer Manufacturing Plant	210-01-05	IW&IR	Current	60	200		Current	300	800		50% or greater survival in 100% industrial wastewater sample	Not present except in trace amounts	Not present in amounts sufficient to create a visible film or sheen
			Oct. 1, 1999	45	140		Oct. 1, 1999	235	650				
			Oct. 1, 2002	35	90		Oct. 1, 2002	150	500				
Agrium Products Inc. Carseland Fertilizer Manufacturing Plant	1580-01-00	N/A*											
Canadian Fertilizers Limited Medicine Hat Fertilizer Manufacturing Plant	1336-00-07	IW		20	100	50		150	500	350			Not present in amounts sufficient to create a visible film or sheen, or other than trace amounts
Sherritt International Corporation Fort Saskatchewan Fertilizer Manufacturing & Metal Manufacturing Plant	211-01-00	IW&IR	Current	44	132		Current	529	1587		50% or greater survival in 100% industrial wastewater sample	Not present except in trace amounts	Not present in amounts sufficient to create a visible film or sheen
			Sept. 1, 2000	30	60		Sept. 1, 2000	200	700				

*= See Appendix for More Information
ALT= Acute Lethality Test
FS&VF= Floating Solids and Visible Foam

IW= Industrial Wastewater
IW&IR= Industrial Wastewater and Industrial Runoff
MDA= Maximum Daily Average (for any month)
MDL= Maximum Daily Limit

N/A= Not Applicable
O&O= Oil and Other Substances
ODA= One Day Amount (may be exceeded one day a month only)
TSS= Total Suspended Solids

Agrium Products Inc. Fort Saskatchewan Fertilizer Manufacturing Plant	20477-00-00	IW	1/week	Composite	1/week	Composite	1/week	Composite	1/week	Composite	1/week	Composite
Agrium Products Inc. Redwater Fertilizer Manufacturing Plant	210-01-05	IW	1/day and prior to release	Composite	1/day and prior to release	Composite	1/day and prior to release	Composite			1/day and prior to release	Composite
		IR	Prior to & during discharge to settling pond	Grab	Prior to & during discharge to settling pond	Grab	Prior to & during discharge to settling pond	Grab			Prior to & during discharge to settling pond	Grab
Agrium Products Inc. Carseland Fertilizer Manufacturing Plant	1580-01-00	IW1			1/month*	RG	1/month*	RG			1/month*	RG
		IW2										
Canadian Fertilizers Limited Medicine Hat Fertilizer Manufacturing Plant	1336-00-07	IW	3/week	Composite	3/week	Composite	1/day	Composite			3/week	Composite
Sherritt International Corporation Fort Saskatchewan Fertilizer Manufacturing & Metal Manufacturing Plant	211-01- 00	IW&IR	1/day	Composite	1/day	Composite	1/day	Composite	1/day	Composite	1/day	Composite

*= See Appendix for More Frequency Information
F= Frequency
IR= Industrial Runoff
IW= Industrial Wastewater
IW1= Industrial Wastewater from Irrigation and Evaporation Ponds
IW2= Industrial Wastewater from Stormwater Ponds
RG= Representative Grab
ST= Sample Type
TKN= Total Kjeldahl Nitrogen
TSS= Total Suspended Solids

Agrium Products Inc. Fort Saskatchewan Fertilizer Manufacturing Plant	20477-00-00	IW	1/week	Composite	1/day	Continuous						
Agrium Products Inc. Redwater Fertilizer Manufacturing Plant	210-01-05	IW	1/day and prior to release	Composite	1/day and prior to release	Composite and Continuous	1/day and prior to release	Totalizer	1/month and prior to release*	Composite or Grab	1/week and prior to release	Composite
		IR	Prior to & during discharge to settling pond	Grab	Prior to & during discharge to settling pond	Grab	Prior to & during discharge to settling pond	Estimate				
Agrium Products Inc. Carseland Fertilizer Manufacturing Plant	1580-01-00	IW1	1/month*	RG	1/month*	RG	1/month*	RG				
		IW2			1/day							
Canadian Fertilizers Limited Medicine Hat Fertilizer Manufacturing Plant	1336-00-07	IW	1/day	Composite	1/day	Composite	1/day	Totalizer	1/month*	Composite	1/week	Composite
Sherritt International Corporation Fort Saskatchewan Fertilizer Manufacturing & Metal Manufacturing Plant	211-01-00	IW&IR	1/day	Composite	1/day	and	1/day	Totalizer	1/month	or Grab	1/week	Composite

*= See Appendix for More Frequency Information
ALT= Acute Lethality Tests
COD= Chemical Oxygen Demand
F= Frequency
IR= Industrial Runoff
IW= Industrial Wastewater
IW1= Industrial Wastewater from Irrigation and Evaporation Ponds
IW2= Industrial Wastewater from Stormwater Ponds
RG= Representative Grab
ST= Sample Type

Fertilizer Manufacturing Plants - Monitoring

Agrium Products Inc. Fort Saskatchewan Fertilizer Manufacturing Plant	20477-00-00	IW												
Agrium Products Inc. Redwater Fertilizer Manufacturing Plant	210-01-05	IW	1/week and prior to release	Composite	1/week and prior to release	Composite	1/week and prior to release	Composite	1/3 months and prior to release	Composite	1/3 months and prior to release	Composite	1/3 months and prior to release	Composite
		IR												
Agrium Products Inc. Carseland Fertilizer Manufacturing Plant	1580-01-00	IW1												
		IW2												
Canadian Fertilizers Limited Medicine Hat Fertilizer Manufacturing Plant	1336-00-07	IW												
Sherritt International Corporation Fort Saskatchewan Fertilizer Manufacturing & Metal Manufacturing Plant	211-01-00	IW&IR	1/week	Composite										

BOD= Biochemical Oxygen Demand
DOC= Dissolved Organic Carbon
F= Frequency
IR= Industrial Runoff
IW= Industrial Wastewater
IW1= Industrial Wastewater from Irrigation and Evaporation Ponds
IW2= Industrial Wastewater from Stormwater Ponds
ST= Sample Type
TOC= Total Organic Carbon

Fertilizer Manufacturing Plants			Monitoring Requirements									
Facility	Approval #	Source	Organic Nitrogen		TSS		Flow/Discharge Volume		ALT		COD	
			F	ST	F	ST	F	ST	F	ST	F	ST
Agrium Products Inc. Fort Saskatchewan Fertilizer Manufacturing Plant	20477-00-00	IW	1/week	Composite	1/day	Continuous						
Agrium Products Inc. Redwater Fertilizer Manufacturing Plant	210-01-05	IW	1/day and prior to release	Composite	1/day and prior to release	Composite and Continuous	1/day and prior to release	Totalizer	1/month and prior to release*	Composite or Grab	1/week and prior to release	Composite
		IR	Prior to & during discharge to settling pond	Grab	Prior to & during discharge to settling pond	Grab	Prior to & during discharge to settling pond	Estimate				
Agrium Products Inc. Carseland Fertilizer Manufacturing Plant	1580-01-00	IW1	1/month*	RG	1/month*	RG	1/month*	RG				
		IW2			1/day							
Canadian Fertilizers Limited Medicine Hat Fertilizer Manufacturing Plant	1336-00-07	IW	1/day	Composite	1/day	Composite	1/day	Totalizer	1/month*	Composite	1/week	Composite
Sherritt International Corporation Fort Saskatchewan Fertilizer Manufacturing & Metal Manufacturing Plant	211-01-00	IW&IR	1/day	Composite	1/day	and	1/day	Totalizer	1/month	or Grab	1/week	Composite

*= See Appendix for More Frequency Information
ALT= Acute Lethality Tests
COD= Chemical Oxygen Demand
F= Frequency
IR= Industrial Runoff
IW= Industrial Wastewater
IW1= Industrial Wastewater from Irrigation and Evaporation Ponds
IW2= Industrial Wastewater from Stormwater Ponds
RG= Representative Grab
ST= Sample Type

Fertilizer Manufacturing Plants			Parameters to be Monitored											
Facility	Approval #	Source	BOD		TOC		DOC		Uranium (238)		Gross Alpha		Gross Beta	
			F	ST	F	ST	F	ST	F	ST	F	ST	F	ST
Agrium Products Inc. Fort Saskatchewan Fertilizer Manufacturing Plant	20477-00-00	IW												
Agrium Products Inc. Redwater Fertilizer Manufacturing Plant	210-01-05	IW	1/week and prior to release	Composite	1/week and prior to release	Composite	1/week and prior to release	Composite	1/3 months and prior to release	Composite	1/3 months and prior to release	Composite	1/3 months and prior to release	Composite
		IR												
Agrium Products Inc. Carseland Fertilizer Manufacturing Plant	1580-01-00	IW1												
		IW2												
Canadian Fertilizers Limited Medicine Hat Fertilizer Manufacturing Plant	1336-00-07	IW												
Sherritt International Corporation Fort Saskatchewan Fertilizer Manufacturing & Metal Manufacturing Plant	211-01-00	IW&IR	1/week	Composite										

BOD= Biochemical Oxygen Demand
DOC= Dissolved Organic Carbon
F= Frequency
IR= Industrial Runoff
IW= Industrial Wastewater
IW1= Industrial Wastewater from Irrigation and Evaporation Ponds
IW2= Industrial Wastewater from Stormwater Ponds
ST= Sample Type
TOC= Total Organic Carbon

Fertilizer Manufacturing Plants			Parameter/Frequency/Sample Type											
Facility	Approval No.	Source	RW	TP		SAR		EC		HM		O&G	
				F*	ST*	F*	ST*	F*	ST*	F*	ST*	F*	ST*
Agrium Products Inc. Fort Saskatchewan Fertilizer Manufacturing Plant	20477-00-00	IW											
Agrium Products Inc. Redwater Fertilizer Manufacturing Plant	210-01-05	IW											
		IR											
Agrium Products Inc. Carseland Fertilizer Manufacturing Plant	1580-01-00	IW1	Must be Monitored	1/month*	RG	1/month*	RG	1/month*	RG	1/year*	RG		
		IW2								1/year*	RG		
Canadian Fertilizers Limited Medicine Hat Fertilizer Manufacturing Plant	1336-00-07	IW	Must be Monitored									1/day	Visual
Sherritt International Corporation Fort Saskatchewan Fertilizer Manufacturing & Metal Manufacturing Plant	211-01-00	IW&IR											

*= See Appendix for More Frequency Information
EC= Electrical Conductivity
F= Frequency
HM= Heavy Metals
IR= Industrial Runoff
IW= Industrial Wastewater
IW1= Industrial Wastewater from Irrigation and Evaporation Ponds
IW2= Industrial Wastewater from Stormwater Ponds
O&G= Oil and Grease
RG= Representative Grab
RW= Receiving Water
SAR= Sodium Adsorption Ratio
ST= Sample Type
TP= Total Phosphorus

Fertilizer Manufacturing Plants			Parameters of Monitoring							
Facility	Approval #	Source	Nickel		Copper		Cobalt		Cyanide	
			#	#	#	#	#	#	#	#
Agrium Products Inc. Fort Saskatchewan Fertilizer Manufacturing Plant	20477-00-00	IW								
Agrium Products Inc. Redwater Fertilizer Manufacturing Plant	210-01-05	IW								
		IR								
Agrium Products Inc. Carseland Fertilizer Manufacturing Plant	1580-01-00	IW1								
		IW2								
Canadian Fertilizers Limited Medicine Hat Fertilizer Manufacturing Plant	1336-00-07	IW								
Sherritt International Corporation Fort Saskatchewan Fertilizer Manufacturing & Metal Manufacturing Plant	211-01- 00	IW&IR	1/day	Composite	1/day	Composite	1/day	Composite	1/day	Composite

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Agrium Products Inc. Fort Saskatchewan Fertilizer Manufacturing Plant	20477-00-00	IW											
Agrium Products Inc. Redwater Fertilizer Manufacturing Plant	210-01-05	IW											
		IR											
Agrium Products Inc. Carseland Fertilizer Manufacturing Plant	1580-01-00	IW1	Must be Monitored	1/month*	RG	1/month*	RG	1/month*	RG	1/year*	RG		
		IW2								1/year*	RG		
Canadian Fertilizers Limited Medicine Hat Fertilizer Manufacturing Plant	1336-00-07	IW	Must be Monitored									1/day	Visual
Sherritt International Corporation Fort Saskatchewan Fertilizer Manufacturing & Metal Manufacturing Plant	211-01-00	IW&IR											

*= See Appendix for More Frequency Information
EC= Electrical Conductivity
F= Frequency
HM= Heavy Metals
IR= Industrial Runoff
IW= Industrial Wastewater
IW1= Industrial Wastewater from Irrigation and Evaporation Ponds
IW2= Industrial Wastewater from Stormwater Ponds
O&G= Oil and Grease
RG= Representative Grab
RW= Receiving Water
SAR= Sodium Adsorption Ratio
ST= Sample Type
TP= Total Phosphorus

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Agrium Products Inc. Fort Saskatchewan Fertilizer Manufacturing Plant	20477-00-00	IW								
Agrium Products Inc. Redwater Fertilizer Manufacturing Plant	210-01-05	IW								
		IR								
Agrium Products Inc. Carseland Fertilizer Manufacturing Plant	1580-01-00	IW1								
		IW2								
Canadian Fertilizers Limited Medicine Hat Fertilizer Manufacturing Plant	1336-00-07	IW								
Sherritt International Corporation Fort Saskatchewan Fertilizer Manufacturing & Metal Manufacturing Plant	211-01- 00	IW&IR	1/day	Composite	1/day	Composite	1/day	Composite	1/day	Composite

TAB 1.D FOUNDRY

There is one foundry facility in Alberta which releases wastewater to the environment.

Limits

- This facility has limits associated with Industrial Wastewater releases. There are two sets of limits, one for normal runoff periods, and one for high runoff periods.

Monitoring

- This facility has a monitoring program for Industrial Wastewater discharges.

Foundry			Parameters and Associated Limits (All limits are in mg/L unless otherwise specified)									
Facility	Approval #	Source	COD		TSS		pH (Units)	Total Iron		O&O	FS/VF	[illegible]
			MDA	MDL	MDA	MDL	NTBE	MDA	MDL		NTBE	[illegible]
AltaSteel Ltd. Edmonton Steel Producing Plant	1408-01-00	IW1	60	100	25	75	6.0-9.5	1.5	3	Not present in amounts sufficient to create a visible film or sheen	Not present except in trace amounts	50% or greater survival in 100% industrial wastewater sample
		IW2	60	100	25	150	6.0-9.5	1.5	5	Not present in amounts sufficient to create a visible film or sheen	Not present except in trace amounts	50% or greater survival in 100% industrial wastewater sample

ALT= Acute Lethality Test
COD= Chemical Oxygen Demand
FS/VF= Floating Solids or Visible Foam
IW1= Industrial Wastewater during Normal Runoff periods
IW2= Industrial Wastewater during High Runoff periods

MDA= Maximum Daily Average (for any month)
MDL= Maximum Daily Limit
NTBE= Never to be Exceeded
O&O= Oil and Other Substances
TSS= Total Suspended Solids

Foundry			Parameters to Monitoring									
Facility	Approval #	Source	COD		TSS		Flow		Acute Lethality	TPH	Effects	
			F	ST	F	ST	F	ST	F	ST	F	ST
AltaSteel Ltd. Edmonton Steel Producing Plant	1408-01-00	IW	1/week	Composite	M/W/F	Composite	1/day	Totalizer	Semi-annually*	Grab	1/week	Composite

Facility	Approval #	Source	Total Metals		Oil		O&G		Dissolved	
			F	ST	F	ST	F	ST	F	ST
AltaSteel Ltd. Edmonton Steel Producing Plant	1408-01-00	IW	Semi-annually	Composite	M/W/F	Composite	M/W/F	Composite	1/week	Composite

*= See Appendix for More Frequency Information

COD= Chemical Oxygen Demand

F= Frequency

IW= Industrial Wastewater

M/W/F= Monday, Wednesday, and Friday are the sampling days

O&G= Oil and Grease

ST= Sample Type

TSS= Total Suspended Solids

TAB 1.E GAS PLANTS

There are approximately 600 approved gas plants in Alberta. They can be divided into three general types, Acid Gas Flaring, Sulfur Recovery, and Acid Gas Re-injection.

Limits and Monitoring for twenty gas plants, which are representative of the majority of facilities in the province, is provided. Four of the gas plants do not have limits or monitoring requirements associated with them.

Limits

- Four of the gas plants have limits associated with Industrial Wastewater discharges.
- Sixteen have limits for Industrial Runoff releases.

Monitoring

- Three of the gas plants monitor parameters on Industrial Wastewater discharges.
- Sixteen of the twenty gas plants monitor parameters on Industrial Runoff discharges.
- Three of the gas plants monitor parameters on Sanitary Sewage discharges.

M121

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Shell Canada Limited - Caroline Sour Gas Plant	11323-01-00	IR		50		25		500	Not present in amounts sufficient to create a visible film or sheen
Shell Canada Limited - Waterton sour gas plant	258-01-02	IW	60 kg/d	120 Kg/d	13 kg/d	25 kg/d	100 kg/d	200 kg/d	Not present in amounts sufficient to create a visible film or sheen
		IR		50		25		250	Not present in amounts sufficient to create a visible film or sheen
Husky Oil Operations Ltd. - Ram River Sour Gas Plant	57-01-01	IR		50		25		500	Not present in amounts sufficient to create a visible film or sheen
Chevron Canada Resources Limited Kaybob South - Beaverhill Lake Gas Unit No. 3 Sour Gas Plant	1508-01-02	IR		50		25		500	Not present in amounts sufficient to create a visible film or sheen
Amoco Canada Petroleum Company Ltd. Kaybob South - Beaverhill Lake Sour Gas Plant	279-01-00	IR		50		25		500	Not present in amounts sufficient to create a visible film or sheen
Petro-Canada Resources Wildcat Hills Sour Gas Plant	9659-01-00	IR		50		25		500	Not present in amounts sufficient to create a visible film or sheen
Shell Canada Limited - Jumping Pound Sour Gas Plant	11588-00-01	IW	75 kg/d	150	12.5 kg/d	30		500	Not present in amounts sufficient to create a visible film or sheen
		IR		50		25		500	Not present in amounts sufficient to create a visible film or sheen
Gulf Canada Resources Limited - Strachan Sour Gas Plant	1350-00-03 93-WL-119A 93-AL-164A(94)	IR		50		25		500	Not present in amounts sufficient to create a visible film or sheen

COD= Chemical Oxygen Demand
IR= Industrial Runoff
IW= Industrial Wastewater

MDA= Maximum Daily Average (for any month)
MDL= Maximum Daily Limit
TSS= Total Suspended Solids

Gas Plants - Limits

Gas Plants			Parameters and Associated Limits (All units are in mg/L unless otherwise specified)						
Facility	Approval #	Source	COD		TSS		Chloride		Oil and Grease
			MDA	MDL	MDA	MDL	MDA	MDL	
Shell Canada Limited - Caroline Sour Gas Plant	11323-01-00	IR		50		25		500	Not present in amounts sufficient to create a visible film or sheen
Shell Canada Limited - Waterton sour gas plant	258-01-02	IW	60 kg/d	120 Kg/d	13 kg/d	25 kg/d	100 kg/d	200 kg/d	Not present in amounts sufficient to create a visible film or sheen
		IR		50		25		250	Not present in amounts sufficient to create a visible film or sheen
Husky Oil Operations Ltd - Ram River Sour Gas Plant	57-01-01	IR		50		25		500	Not present in amounts sufficient to create a visible film or sheen
Chevron Canada Resources Limited Kaybob South - Beaverhill Lake Gas Unit No 3 Sour Gas Plant	1508-01-02	IR		50		25		500	Not present in amounts sufficient to create a visible film or sheen
Amoco Canada Petroleum Company Ltd Kaybob South - Beaverhill Lake Sour Gas Plant	279-01-00	IR		50		25		500	Not present in amounts sufficient to create a visible film or sheen
Petro-Canada Resources Wildcat Hills Sour Gas Plant	9859-01-00	IR		50		25		500	Not present in amounts sufficient to create a visible film or sheen
Shell Canada Limited - Jumping Pound Sour Gas Plant	11588-00-01	IW	75 kg/d	150	12 5 kg/d	30		500	Not present in amounts sufficient to create a visible film or sheen
		IR		50		25		500	Not present in amounts sufficient to create a visible film or sheen
Gulf Canada Resources Limited - Strachan Sour Gas Plant	1350-00-03 93-WL-119A 93-AL-164A(94)	IR		50		25		500	Not present in amounts sufficient to create a visible film or sheen

COD= Chemical Oxygen Demand
IR= Industrial Runoff
IW= Industrial Westewater

MDA= Maximum Daily Average (for any month)
MDL= Maximum Daily Limit
TSS= Total Suspended Solids

Gas Plants - Limits

Gas Plants		Effluent Limits (All units are in mg/L unless otherwise specified)							
Facility	Approval #	Source	NH_3-N MDA	NH_3-N MDL	pH (Units) NTBE	ALT	FCR MDA	FCR MDL	FS/VF
Shell Canada Limited - Caroline Sour Gas Plant	11323-01-00	IR		5	6.0-9.5				
Shell Canada Limited - Waterton sour gas plant	258-01-02	IW	2 kg/d	4 kg/d	6.0-9.5	50% or greater survival in 100% industrial wastewater sample			Not present except in trace amounts
		IR		2	6.0-9.5				Not present except in trace amounts
Husky Oil Operations Ltd. - Ram River Sour Gas Plant	57-01-01	IR		5	6.0-9.5				
Chevron Canada Resources Limited Kaybob South - Beaverhill Lake Gas Unit No. 3 Sour Gas Plant	1508-01-02	IR		5	6.0-9.5				
Amoco Canada Petroleum Company Ltd Kaybob South - Beaverhill Lake Sour Gas Plant	279-01-00	IR		5	6.0-9.5				
Petro-Canada Resources Wildcat Hills Sour Gas Plant	9859-01-00	IR		5	6.0-9.5				
Shell Canada Limited - Jumping Pound Sour Gas Plant	11588-00-01	IW	2 kg/d	5	6.0-9.5				Not present except in trace amounts
		IR		5	6.0-9.5				Not present except in trace amounts
Gulf Canada Resources Limited - Strachan Sour Gas Plant	1350-00-03 93-WL-119A 93-AL-164A(94)	IR		5	6.0-9.5				

ALT= Acute Lethality Test
FCR= Free Chlorine Residual
FS/VF= Floating Solids or Visible Foam

IR= Industrial Runoff
IW= Industrial Wastewater
MDA= Maximum Daily Average (for any month)

MDL= Maximum Daily Limit
NH_3-N= Ammonia-Nitrogen
NTBE= Not to be Exceeded

Gas Plants - Limits

Gas Plants			Parameter and Approved Limit (All units are in mg/L unless otherwise specified)						
Facility	Approval #	Source	COD		TSS		Chloride		Oil and Grease
			MDA	MDL	MDA	MDL	MDA	MDL	
Crestar Energy Inc. - Vulcan Sour Gas Plant	282-01-00	IR		50		25		500	Not present in amounts sufficient to create a visible film or sheen
Vintage Resource Corp - West Drumheller Sour Gas Plant	10384-01-00	IR		50		25		500	Not present in amounts sufficient to create a visible film or sheen
Union Pacific Resources Inc - Spirit River Sour Gas Plant	11096-01-00	IR		50		25		500	Not present in amounts sufficient to create a visible film or sheen
AltaGas Services Inc - Sedgewick Sour Gas Plant	11098-01-00	N/A*							
Shell Canada Limited - Hope Creek Sour Gas Plant	16441-01-00	IR		50		25		500	Not present in amounts sufficient to create a visible film or sheen
Petro-Canada Resources - Whitecourt Sour Gas Plant	10315-01-01	IR		50		25		500	Not present in amounts sufficient to create a visible film or sheen
Novagas Clearinghouse Ltd. - Zama Sour Gas Plant #3	46565-00-00	N/A*							
PanCanadian Petroleum Limited - Wayne-Rosedale Sour Gas Plant	17-00-01 95-IND-002	IR		50		25		500	Not present in amounts sufficient to create a visible film or sheen
Morrison Petroleums Ltd. - Wizard Lake Sour Gas Plant	1558-00-04 95-IND-010A	N/A*							
Novagas Clearinghouse Ltd - Zama Sour Gas Plant #2	95-IND-036	N/A*							
Petro-Canada - Empress Straddle Gas Plant	289-01-04	IW	82.5 kg/d	150	27.5 kg/d	50			Not present in amounts sufficient to create a visible film or sheen
		IR		50		25			Not present in amounts sufficient to create a visible film or sheen
Alberta Natural Gas Company Ltd Cochrane Extraction (Straddle) Gas Plant	979-01-01	IR		50		25			Not present in amounts sufficient to create a visible film or sheen
		IW	35 kg/d	150	10 kg/d	50			Not present in amounts sufficient to create a visible film or sheen

*= See Appendix for More Information
COD= Chemical Oxygen Demand
IR= Industrial Runoff
IW= Industrial Wastewater
MDA= Maximum Daily Average (for any month)
MDL= Maximum Daily Limit
N/A= Not Applicable
TSS= Total Suspended Solids

Shell Canada Limited - Caroline Sour Gas Plant	11323-01-00	IR		5	6.0-9.5				
Shell Canada Limited - Waterton sour gas plant	258-01-02	IW	2 kg/d	4 kg/d	6.0-9.5	50% or greater survival in 100% industrial wastewater sample			Not present except in trace amounts
		IR		2	6.0-9.5				Not present except in trace amounts
Husky Oil Operations Ltd. - Ram River Sour Gas Plant	57-01-01	IR		5	6.0-9.5				
Chevron Canada Resources Limited Kaybob South - Beaverhill Lake Gas Unit No. 3 Sour Gas Plant	1508-01-02	IR		5	6.0-9.5				
Amoco Canada Petroleum Company Ltd. Kaybob South - Beaverhill Lake Sour Gas Plant	279-01-00	IR		5	6.0-9.5				
Petro-Canada Resources Wildcat Hills Sour Gas Plant	9859-01-00	IR		5	6.0-9.5				
Shell Canada Limited - Jumping Pound Sour Gas Plant	11588-00-01	IW	2 kg/d	5	6.0-9.5				Not present except in trace amounts
		IR		5	6.0-9.5				Not present except in trace amounts
Gulf Canada Resources Limited - Strachan Sour Gas Plant	1350-00-03 93-WL-119A 93-AL-164A(94)	IR		5	6.0-9.5				

ALT= Acute Lethality Test
FCR= Free Chlorine Residual
FS/VF= Floating Solids or Visible Foam

IR= Industrial Runoff
IW= Industrial Wastewater
MDA= Maximum Daily Average (for any month)

MDL= Maximum Daily Limit
NH_3-N= Ammonia-Nitrogen
NTBE= Not to be Exceeded

Gas Plants - Limits

Crestar Energy Inc. - Vulcan Sour Gas Plant	282-01-00	IR		50		25		500	Not present in amounts sufficient to create a visible film or sheen
Vintage Resource Corp. - West Drumheller Sour Gas Plant	10384-01-00	IR		50		25		500	Not present in amounts sufficient to create a visible film or sheen
Union Pacific Resources Inc. - Spirit River Sour Gas Plant	11096-01-00	IR		50		25		500	Not present in amounts sufficient to create a visible film or sheen
AltaGas Services Inc. - Sedgewick Sour Gas Plant	11098-01-00	N/A*							
Shell Canada Limited - Hope Creek Sour Gas Plant	16441-01-00	IR		50		25		500	Not present in amounts sufficient to create a visible film or sheen
Petro-Canada Resources - Whitecourt Sour Gas Plant	10315-01-01	IR		50		25		500	Not present in amounts sufficient to create a visible film or sheen
Novagas Clearinghouse Ltd. - Zama Sour Gas Plant #3	46565-00-00	N/A*							
PanCanadian Petroleum Limited - Wayne-Rosedale Sour Gas Plant	17-00-01 95-IND-002	IR		50		25		500	Not present in amounts sufficient to create a visible film or sheen
Morrison Petroleums Ltd. - Wizard Lake Sour Gas Plant	1556-00-04 95-IND-010A	N/A*							
Novagas Clearinghouse Ltd. - Zama Sour Gas Plant #2	95-IND-036	N/A*							
Petro-Canada - Empress Straddle Gas Plant	289-01-04	IW	82.5 kg/d	150	27.5 kg/d	50			Not present in amounts sufficient to create a visible film or sheen
		IR		50		25			Not present in amounts sufficient to create a visible film or sheen
Alberta Natural Gas Company Ltd. Cochrane Extraction (Straddle) Gas Plant	979-01-01	IR		50		25			Not present in amounts sufficient to create a visible film or sheen
		IW	35 kg/d	150	10 kg/d	50			Not present in amounts sufficient to create a visible film or sheen

*= See Appendix for More Information
COD= Chemical Oxygen Demand
IR= Industrial Runoff
IW= Industrial Wastewater
MDA= Maximum Daily Average (for any month)
MDL= Maximum Daily Limit
N/A= Not Applicable
TSS= Total Suspended Solids

Crester Energy Inc. - Vulcan Sour Gas Plant	282-01-00	IR		5	6.0-9.5				
Vintage Resource Corp. - West Drumheller Sour Gas Plant	10384-01-00	IR		5	6.0-9.5				
Union Pacific Resources Inc. - Spirit River Sour Gas Plant	11096-01-00	IR		5	6.0-9.5				
AltaGas Services Inc. - Sedgewick Sour Gas Plant	11098-01-00	N/A*							
Shell Canada Limited - Hope Creek Sour Gas Plant	16441-01-00	IR		5	6.0-9.5				
Petro-Canada Resources - Whitecourt Sour Gas Plant	10315-01-01	IR		5	6.0-9.5				
Novagas Clearinghouse Ltd. - Zama Sour Gas Plant #3	46565-00-00	N/A*							
PanCanadian Petroleum Limited - Wayne-Rosedale Sour Gas Plant	17-00-01 95-IND-002	IR		5	6.0-9.5				
Morrison Petroleums Ltd. - Wizard Lake Sour Gas Plant	1558-00-04 95-IND-010A	N/A*							
Novagas Clearinghouse Ltd. - Zama Sour Gas Plant	95-IND-036	N/A*							
Petro-Canada - Empress Straddle Gas Plant	289-01-04	IW	2.[illegible] kg/d	5	6.0-9.5	50% or greater survival in 100% process wastewater sample	0.28 kg/d	0.5	
		IR		5	6.0-9.5				
Alberta Natural Gas Company Ltd. Cochrane Extraction (Straddle) Gas Plant	979-01-01	IR		5	6.0-9.5				
		IW	1 kg/d	5	6.0-9.5		0.15 kg/d	0.5	

*= See Appendix for More Information
ALT= Acute Lethality Test
FCR= Free Chlorine Residual
FS/F= Floating Solids or Visible Foam

IR= Industrial Runoff
IW= Industrial Wastewater
MDA= Maximum Daily Average (for any month)
MDL= Maximum Daily Limit

N/A= Not Applicable
NH_3-N= Ammonia-Nitrogen
NTBE= Not to be Exceeded

Shell Canada Limited Caroline Sour Gas Plant	11323-01-00	IR	1/week and Prior to Release	Grab	1/week and Prior to Release	Grab	1/day	Volume Estimate	1/day and Prior to Release	Grab		
Shell Canada Limited Waterton Sour Gas Plant	258-01-02	IW	1/day	Composite	1/day	Composite	1/day	Totalizer	1/day	Continuous	ALT* And CT*	Composite or Grab
		IR	1/day	Composite	1/day	Composite	1/day	Totalizer	1/day	Continuous		
		IR1	1 prior to and during release	Grab	1 prior to and during release	Grab	1/day	Volume Estimate	1/day and prior to release	Grab		
Husky Oil Operations Ltd. Ram River Sour Gas Plant	57-01-01	IR	1/week and prior to release	Grab	1/week and prior to release	Grab	1/day and prior to release	Grab	1/day and prior to release	Grab	ALT* 1/month*	Grab
		SS			1/release	Grab	1/day	Volume Estimate				
Chevron Canada Resources Limited Kaybob South - Beaverhill Lake Gas Unit No. 3 Sour Gas Plant	1508-01-02	IR	1/week	Grab	1/week	Grab	1/day	Grab	1/day	Grab		
		SS			1/release	Grab	1/day	Volume Estimate				
Amoco Canada Petroleum Company Ltd. Kaybob South - Beaverhill Lake Sour Gas Plant	279-01-00	IR	1/week	Grab	1/week	Grab	1/day	Grab	1/day	Grab		
		SS			1/release	Grab	1/day	Volume Estimate				
Petro-Canada Resources Wildcat Hills Sour Gas Plant	9659-01-00	IR	1/week and prior to release	Grab	1/week and prior to release	Grab	1/day and prior to release	Grab	1/day and prior to release	Grab		
Shell Canada Limited Jumping Pound Sour Gas Plant	11566-00-01	IW	1/day	Composite	1/day	Composite	1/day	Continuous	1/day	Composite	ALT* 1/month*	Grab or Composite
		IR	during discharge	Grab or Composite	during discharge	Grab or Composite	during discharge	Continuous	during discharge	Grab or Composite		
Gulf Canada Resources Limited Strachan Sour Gas Plant	93-WL-119A 93-AL-164A(94) 1350-00-02	IR	1/week and Prior to Release	Grab	1/week and Prior to Release	Grab	1/day and Prior to Release	Grab	1/day and Prior to Release	Grab		

*= See Appendix for More Frequency Information
ALT= Acute Lethality Tests
COD= Chemical Oxygen Demand
CT= Chronic Toxicity
F= Frequency
IR= Industrial Runoff
IR1= Industrial Runoff from Batch Releases
IW= Industrial Wastewater
SS= Sanitary Sewage
ST= Sample Type
TSS= Total Suspended Solids

Facility	Approval #	Source	[illegible]	[illegible]	[illegible]	ALT*	FCR	[illegible]	FS/VF
Crestar Energy Inc. - Vulcan Sour Gas Plant	282-01-00	IR		5	6.0-9.5				
Vintage Resource Corp. - West Drumheller Sour Gas Plant	10384-01-00	IR		5	6.0-9.5				
Union Pacific Resources Inc. - Spirit River Sour Gas Plant	11096-01-00	IR		5	6.0-9.5				
AltaGas Services Inc. - Sedgewick Sour Gas Plant	11098-01-00	N/A*							
Shell Canada Limited - Hope Creek Sour Gas Plant	16441-01-00	IR		5	6.0-9.5				
Petro-Canada Resources - Whitecourt Sour Gas Plant	10315-01-01	IR		5	6.0-9.5				
Novagas Clearinghouse Ltd. - Zama Sour Gas Plant #3	46565-00-00	N/A*							
PanCanadian Petroleum Limited - Wayne-Rosedale Sour Gas Plant	17-00-01 95-IND-002	IR		5	6.0-9.5				
Morrison Petroleums Ltd. - Wizard Lake Sour Gas Plant	1558-00-04 95-IND-010A	N/A*							
Novagas Clearinghouse Ltd. - Zama Sour Gas Plant	95-IND-036	N/A*							
Petro-Canada - Empress Straddle Gas Plant	289-01-04	IW	2.8 kg/d	5	6.0-9.5	50% or greater survival in 100% process wastewater sample	0.28 kg/d	0.5	
		IR		5	6.0-9.5				
Alberta Natural Gas Company Ltd Cochrane Extraction (Straddle) Gas Plant	979-01-01	IR		5	6.0-9.5				
		IW	1 kg/d	5	6.0-9.5		0.15 kg/d	0.5	

*= See Appendix for More Information
ALT= Acute Lethality Test
FCR= Free Chlorine Residual
FS/VF= Floating Solids or Visible Foam

IR= Industrial Runoff
IW= Industrial Wastewater
MDA= Maximum Daily Average (for any month)
MDL= Maximum Daily Limit

N/A= Not Applicable
NH_3-N= Ammonia-Nitrogen
NTBE= Not to be Exceeded

Gas Plants			Monitoring Requirements									
Facility	Approval #	Source	COD		TSS		Flow/Discharge Volume				Toxicity Tests	
			F	ST	F	ST	F		F	ST	F	ST
Shell Canada Limited Caroline Sour Gas Plant	11323-01-00	IR	1/week and Prior to Release	Grab	1/week and Prior to Release	Grab	1/day	Volume Estimate	1/day and Prior to Release	Grab		
Shell Canada Limited Waterton Sour Gas Plant	258-01-02	IW	1/day	Composite	1/day	Composite	1/day	Totalizer	1/day	Continuous	ALT* And CT*	Composite or Grab
		IR	1/day	Composite	1/day	Composite	1/day	Totalizer	1/day	Continuous		
		IR1	1 prior to and during release	Grab	1 prior to and during release	Grab	1/day	Volume Estimate	1/day and prior to release	Grab		
Husky Oil Operations Ltd Ram River Sour Gas Plant	57-01-01	IR	1/week and prior to release	Grab	1/week and prior to release	Grab	1/day and prior to release	Grab	1/day and prior to release	Grab	ALT* 1/month*	Grab
		SS			1/release	Grab	1/day	Volume Estimate				
Chevron Canada Resources Limited Kaybob South - Beaverhill Lake Gas Unit No. 3 Sour Gas Plant	1508-01-02	IR	1/week	Grab	1/week	Grab	1/day	Grab	1/day	Grab		
		SS			1/release	Grab	1/day	Volume Estimate				
Amoco Canada Petroleum Company Ltd Kaybob South - Beaverhill Lake Sour Gas Plant	279-01-00	IR	1/week	Grab	1/week	Grab	1/day	Grab	1/day	Grab		
		SS			1/release	Grab	1/day	Volume Estimate				
Petro-Canada Resources Wildcat Hills Sour Gas Plant	9859-01-00	IR	1/week and prior to release	Grab	1/week and prior to release	Grab	1/day and prior to release	Grab	1/day and prior to release	Grab		
Shell Canada Limited Jumping Pound Sour Gas Plant	11588-00-01	IW	1/day	Composite	1/day	Composite	1/day	Continuous	1/day	Composite	ALT* 1/month*	Grab or Composite
		IR	during discharge	Grab or Composite	during discharge	Grab or Composite	during discharge	Continuous	during discharge	Grab or Composite		
Gulf Canada Resources Limited Strachan Sour Gas Plant	93-WL-119A 93-AL-164A(94) 1350-00-02	IR	1/week and Prior to Release	Grab	1/week and Prior to Release	Grab	1/day and Prior to Release	Grab	1/day and Prior to Release	Grab		

*= See Appendix for More Frequency Information
ALT= Acute Lethality Tests
COD= Chemical Oxygen Demand
CT= Chronic Toxicity
F= Frequency
IR= Industrial Runoff
IR1= Industrial Runoff from Batch Releases
IW= Industrial Wastewater
SS= Sanitary Sewage
ST= Sample Type
TSS= Total Suspended Solids

Gas Plants													
Facility	Approval #	Source	Ammonia-Nitrogen		Total Phosphate		DOC		RW			Conductivity	
			F	ST	F	ST	F	ST				F	ST
Shell Canada Limited Caroline Sour Gas Plant	11323-01-00	IR	1/week and Prior to Release	Grab									
Shell Canada Limited Waterton Sour Gas Plant	258-01-02	IW	1/day	Grab	1/week	Composite			Must be monitored				
		IR	1/day	Grab	1/week	Composite							
		IR1	1 prior to and during release	Grab	1/year	Grab							
Husky Oil Operations Ltd. Ram River Sour Gas Plant	57-01-01	IR	1/week and prior to release	Grab									
		SS											
Chevron Canada Resources Limited Kaybob South - Beaverhill Lake Gas Unit No. 3 Sour Gas Plant	1508-01-02	IR	1/week	Grab									
		SS											
Amoco Canada Petroleum Company Ltd. Kaybob South - Beaverhill Lake Sour Gas Plant	279-01-00	IR	1/week	Grab									
		SS											
Petro-Canada Resources Wildcat Hills Sour Gas Plant	9659-01-00	IR	1/week and prior to release	Grab									
Shell Canada Limited Jumping Pound Sour Gas Plant	11588-00-01	IW	1/day	Composite	1/week	Composite	1/week	Composite				1/week	Composite
		IR	during discharge	Grab or Composite									
Gulf Canada Resources Limited Strachan Sour Gas Plant	93-WL-119A 93-AL-164A(94) 1350-00-02	IR	1/week and Prior to Release	Grab									

DOC= Dissolved Organic Carbon
F= Frequency
FCR= Free Chlorine Residual

IR= Industrial Runoff
IR1= Industrial Runoff from Batch Releases
IW= Industrial Wastewater

RW= Receiving Water
SS= Sanitary Sewage
ST= Sample Type

[illegible]	Approval	Source	Total Metals		Sulphate		O&O		[illegible]		[illegible]	
			F	ST	F	ST	F	ST				
Shell Canada Limited Caroline Sour Gas Plant	11323-01-00	IR			1/week and Prior to Release	Grab	1/day and Prior to Release	Grab			1/week and Prior to Release	Grab
Shell Canada Limited Waterton Sour Gas Plant	258-01-02	IW	1/month	Grab	1/day	Composite			1/month	Composite or Grab	1/day	Composite
		IR	1/month	Grab	1/day	Composite					1/day	Composite
		IR1	1/year	Grab	1 prior to and during release	Grab	Prior to release	Visual			1 prior to and during release	Grab
Husky Oil Operations Ltd Ram River Sour Gas Plant	57-01-01	IR			1/week and prior to release	Grab	1/day and prior to release	Grab			1/week and prior to release	Grab
		SS										
Chevron Canada Resources Limited Kaybob South - Beaverhill Lake Gas Unit No. 3 Sour Gas Plant	1508-01-02	IR			1/week	Grab	1/day	Grab			1/week	Grab
		SS										
Amoco Canada Petroleum Company Ltd Kaybob South - Beaverhill Lake Sour Gas Plant	279-01-00	IR			1/week	Grab	1/day	Grab			1/week	Grab
		SS										
Petro-Canada Resources Wilcat Hills Sour Gas Plant	9859-01-00	IR			1/week and prior to release	Grab	1/day and prior to release	Grab			1/week and prior to release	Grab
Shell Canada Limited Jumping Pound Sour Gas Plant	11588-00-01	IW	1/3 months	Composite	1/week	Composite	1/week	Composite	1/week	Composite	1/day	Composite
		IR			during discharge	Grab or Composite	during discharge	Grab or Composite			during discharge	Grab or Composite
Gulf Canada Resources Limited Strachan Sour Gas Plant	93-WL-119A 93-AL-164A(94) 1350-00-02	IR			1/week and Prior to Release	Grab	1/day and Prior to Release	Grab			1/week and Prior to Release	Grab

F= Frequency
IR= Industrial Runoff
IR1= Industrial Runoff from Batch Releases
IW= Industrial Wastewater

LBT= Luminescent Bacterial Test (EC50, 15 min)
O&O= Oil and Other Substances
SS= Sanitary Sewage
ST= Sample Type

Shell Canada Limited Caroline Sour Gas Plant	11323-01-00	IR	1/week and Prior to Release	Grab									
Shell Canada Limited Waterton Sour Gas Plant	258-01-02	IW	1/day	Grab	1/week	Composite			Must be monitored				
		IR	1/day	Grab	1/week	Composite							
		IR1	1 prior to and during release	Grab	1/year	Grab							
Husky Oil Operations Ltd. Ram River Sour Gas Plant	57-01-01	IR	1/week and prior to release	Grab									
		SS											
Chevron Canada Resources Limited Keybob South - Beaverhill Lake Gas Unit No. 3 Sour Gas Plant	1506-01-02	IR	1/week	Grab									
		SS											
Amoco Canada Petroleum Company Ltd. Keybob South - Beaverhill Lake Sour Gas Plant	279-01-00	IR	1/week	Grab									
		SS											
Petro-Canada Resources Wildcat Hills Sour Gas Plant	9858-01-00	IR	1/week and prior to release	Grab									
Shell Canada Limited Jumping Pound Sour Gas Plant	11566-00-01	IW	1/day	Composite	1/week	Composite	1/week	Composite				1/week	Composite
		IR	during discharge	Grab or Composite									
Gulf Canada Resources Limited Strachan Sour Gas Plant	93-WL-119A 93-AL-164A(94) 1350-00-02	IR	1/week and Prior to Release	Grab									

DOC= Dissolved Organic Carbon
F= Frequency
FCR= Free Chlorine Residual

IR= Industrial Runoff
IR1= Industrial Runoff from Batch Releases
IW= Industrial Wastewater

RW= Receiving Water
SS= Sanitary Sewage
ST= Sample Type

Shell Canada Limited Caroline Sour Gas Plant	11323-01-00	IR			1/week and Prior to Release	Grab	1/day and Prior to Release	Grab			1/week and Prior to Release	Grab
Shell Canada Limited Waterton Sour Gas Plant	258-01-02	IW	1/month	Grab	1/day	Composite			1/month	Composite or Grab	1/day	Composite
		IR	1/month	Grab	1/day	Composite					1/day	Composite
		IR1	1/year	Grab	1 prior to and during release	Grab	Prior to release	Visual			1 prior to and during release	Grab
Husky Oil Operations Ltd. Ram River Sour Gas Plant	57-01-01	IR			1/week and prior to release	Grab	1/day and prior to release	Grab			1/week and prior to release	Grab
		SS										
Chevron Canada Resources Limited Kaybob South - Beaverhill Lake Gas Unit No. 3 Sour Gas Plant	1508-01-02	IR			1/week	Grab	1/day	Grab			1/week	Grab
		SS										
Amoco Canada Petroleum Company Ltd. Kaybob South - Beaverhill Lake Sour Gas Plant	279-01-00	IR			1/week	Grab	1/day	Grab			1/week	Grab
		SS										
Petro-Canada Resources Willcott Hills Sour Gas Plant	6659-01-00	IR			1/week and prior to release	Grab	1/day and prior to release	Grab			1/week and prior to release	Grab
Shell Canada Limited Jumping Pound Sour Gas Plant	11568-00-01	IW	1/3 months	Composite	1/week	Composite	1/week	Composite	1/week	Composite	1/day	Composite
		IR			during discharge	Grab or Composite	during discharge	Grab or Composite			during discharge	Grab or Composite
Gulf Canada Resources Limited Strachan Sour Gas Plant	93-WL-116A 93-AL-164A(94) 1350-00-02	IR			1/week and Prior to Release	Grab	1/day and Prior to Release	Grab			1/week and Prior to Release	Grab

F= Frequency
IR= Industrial Runoff
IR1= Industrial Runoff from Batch Releases
IW= Industrial Wastewater

LBT= Luminescent Bacterial Test (EC50, 15 min)
O&O= Oil and Other Substances
SS= Sanitary Sewage
ST= Sample Type

Shell Canada Limited Caroline Sour Gas Plant	11323-01-00	IR								
Shell Canada Limited Waterton Sour Gas Plant	256-01-02	IW							1/day	Grab or Recorder
		IR							1/Week	Grab or Recorder
		IR1								
Husky Oil Operations Ltd. Ram River Sour Gas Plant	57-01-01	IR								
		SS					1/release	Grab		
Chevron Canada Resources Limited Keybob South - Beaverhill Lake Gas Unit No. 3 Sour Gas Plant	1506-01-02	IR								
		SS					1/release	Grab		
Amoco Canada Petroleum Company Ltd. Keybob South - Beaverhill Lake Sour Gas Plant	279-01-00	IR								
		SS					1/release	Grab		
Petro-Canada Resources Wildcat Hills Sour Gas Plant	9669-01-00	IR								
Shell Canada Limited Jumping Pound Sour Gas Plant	11586-00-01	IW	1/week	Composite	1/week	Composite				
		IR								
Gulf Canada Resources Limited Strachan Sour Gas Plant	93-WL-119A 93-AL-164A(B4) 1350-00-02	IR								

BOD= Biochemical Oxygen Demand
F= Frequency
IR= Industrial Runoff
IR1= Industrial Runoff from Batch Releases

IW= Industrial Wastewater
SS= Sanitary Sewage
ST= Sample Type
TDS= Total Dissolved Solids
TOC= Total Organic Carbon

Crestar Energy Inc. Vulcan Sour Gas Plant	282-01-00	IR	1/week	Grab	1/week	Grab	1/day	Grab	1/day	Grab		
Vintage Resource Corp. West Drumheller Sour Gas Plant	10384-01-00	IR	1/week and Prior to Release	Grab	1/week and Prior to Release	Grab	1/day and Prior to Release	Grab	1/day and Prior to Release	Grab		
Union Pacific Resources Inc. Spirit River Sour Gas Plant	11096-01-00	IR	1/week and Prior to Release	Grab	1/week and Prior to Release	Grab	1/day and Prior to Release	Grab	1/day and Prior to Release	Grab		
AltaGas Services Inc. - Sedgewick Sour Gas Plant	11098-01-00	N/A*										
Shell Canada Limited Hope Creek Sour Gas Plant	16441-01-00	IR	1/week and Prior to Release	Grab	1/week and Prior to Release	Grab	1/day and Prior to Release	Grab	1/day and Prior to Release	Grab		
Petro-Canada Resources Whitecourt Sour Gas Plant	10315-01-01	IR	1/week and Prior to Release	Grab	1/week and Prior to Release	Grab	1/day and Prior to Release	Grab	1/day and Prior to Release	Grab		
Novagas Clearinghouse Ltd. - Zama Sour Gas Plant #3	46585-00-00	N/A*										
PanCanadian Petroleum Limited Wayne-Rosedale Sour Gas Plant	95-IND-002 17-00-01	IR	1/week and Prior to Release	Grab	1/week and Prior to Release	Grab	1/day and Prior to Release	Grab	1/day and Prior to Release	Grab		
Morrison Petroleums Ltd. Wizard Lake Sour Gas Plant	95-IND-010A 1568-00-03	N/A*										
Novagas Clearinghouse Ltd. - Zama Sour Gas Plant #2	95-IND-036	N/A*										
Petro-Canada Empress Straddle Gas Plant	289-01-04	IW	1/week	Grab	1/week	Grab	1/day	Continuous	1/day	Grab	ALT* 1/month*	Grab
		IR	1/week and prior to release	Grab	1/week and prior to release	Grab	1/day and prior to release	Grab	1/day and prior to release	Grab		
Alberta Natural Gas Company Ltd. Cochrane Extraction (Straddle) Gas Plant	979-01-01	IR	1/week and Prior to Release	Grab	1/week and Prior to Release	Grab	1/day and Prior to Release	Grab	1/day and Prior to Release	Grab		

*= See Appendix for More Information
ALT= Acute Lethality Tests
COD= Chemical Oxygen Demand
F= Frequency
IR= Industrial Runoff
IW= Industrial Wastewater
N/A= Not Applicable
ST= Sample Type
TSS= Total Suspended Solids

Gas Plants										
Facility	Approval #	Source	Total Hardness		TDS		BOD		Temperature	
			F	ST	F	ST	F	ST	F	ST
Shell Canada Limited Caroline Sour Gas Plant	11323-01-00	IR								
Shell Canada Limited Waterton Sour Gas Plant	258-01-02	IW							1/day	Grab or Recorder
		IR							1/Week	Grab or Recorder
		IR1								
Husky Oil Operations Ltd Ram River Sour Gas Plant	57-01-01	IR								
		SS					1/release	Grab		
Chevron Canada Resources Limited Kaybob South - Beaverhill Lake Gas Unit No. 3 Sour Gas Plant	1508-01-02	IR								
		SS					1/release	Grab		
Amoco Canada Petroleum Company Ltd. Kaybob South - Beaverhill Lake Sour Gas Plant	279-01-00	IR								
		SS					1/release	Grab		
Petro-Canada Resources Wildcat Hills Sour Gas Plant	9859-01-00	IR								
Shell Canada Limited Jumping Pound Sour Gas Plant	11568-00-01	IW	1/week	Composite	1/week	Composite				
		IR								
Gulf Canada Resources Limited Strachan Sour Gas Plant	93-WL-119A 93-AL-184A(94) 1353-00-02	IR								

BOD= Biochemical Oxygen Demand
F= Frequency
IR= Industrial Runoff
IR1= Industrial Runoff from Batch Releases
IW= Industrial Wastewater
SS= Sanitary Sewage
ST= Sample Type
TDS= Total Dissolved Solids
TOC= Total Organic Carbon

[illegible]			[illegible]									
[illegible]	Approval #	Source	COD		TSS		Flow/Discharge	Volume	[illegible]		[illegible]	
			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]
Crestar Energy Inc. Vulcan Sour Gas Plant	282-01-00	IR	1/week	Grab	1/week	Grab	1/day	Grab	1/day	Grab		
Vintage Resource Corp. West Drumheller Sour Gas Plant	10384-01-00	IR	1/week and Prior to Release	Grab	1/week and Prior to Release	Grab	1/day and Prior to Release	Grab	1/day and Prior to Release	Grab		
Union Pacific Resources Inc. Spirit River Sour Gas Plant	11096-01-00	IR	1/week and Prior to Release	Grab	1/week and Prior to Release	Grab	1/day and Prior to Release	Grab	1/day and Prior to Release	Grab		
AltaGas Services Inc. - Sedgewick Sour Gas Plant	11098-01-00	N/A*										
Shell Canada Limited Hope Creek Sour Gas Plant	16441-01-00	IR	1/week and Prior to Release	Grab	1/week and Prior to Release	Grab	1/day and Prior to Release	Grab	1/day and Prior to Release	Grab		
Petro-Canada Resources Whitecourt Sour Gas Plant	10315-01-01	IR	1/week and Prior to Release	Grab	1/week and Prior to Release	Grab	1/day and Prior to Release	Grab	1/day and Prior to Release	Grab		
Novagas Clearinghouse Ltd. - Zama Sour Gas Plant #3	46565-00-00	N/A*										
PanCanadian Petroleum Limited Wayne-Rosedale Sour Gas Plant	95-IND-002 17-00-01	IR	1/week and Prior to Release	Grab	1/week and Prior to Release	Grab	1/day and Prior to Release	Grab	1/day and Prior to Release	Grab		
Morrison Petroleums Ltd. Wizard Lake Sour Gas Plant	95-IND-010A 1558-00-03	N/A*										
Novagas Clearinghouse Ltd. - Zama Sour Gas Plant #2	95-IND-036	N/A*										
Petro-Canada Empress Straddle Gas Plant	289-01-04	IW	1/week	Grab	1/week	Grab	1/day	Continuous	1/day	Grab	ALT* 1/month*	Grab
		IR	1/week and prior to release	Grab	1/week and prior to release	Grab	1/day and prior to release	Grab	1/day and prior to release	Grab		
Alberta Natural Gas Company Ltd Cochrane Extraction (Straddle) Gas Plant	979-01-01	IR	1/week and Prior to Release	Grab	1/week and Prior to Release	Grab	1/day and Prior to Release	Grab	1/day and Prior to Release	Grab		

*= See Appendix for More Information
ALT= Acute Lethality Tests
COD= Chemical Oxygen Demand
F= Frequency
IR= Industrial Runoff
IW= Industrial Wastewater
N/A= Not Applicable
ST= Sample Type
TSS= Total Suspended Solids

[illegible]													
Facility	Approval #	Source	Ammonia-Nitrogen		Total Phosphate		DOC		RW	FCR		Conductivity	
			F	ST	F	ST	F	ST					
Crestar Energy Inc. Vulcan Sour Gas Plant	282-01-00	IR	1/week and	Grab									
Vintage Resource Corp West Drumheller Sour Gas Plant	10384-01-00	IR	1/week and Prior to Release	Grab									
Union Pacific Resources Inc. Spirit River Sour Gas Plant	11096-01-00	IR	1/week and Prior to Release	Grab									
AltaGas Services Inc. - Sedgewick Sour Gas Plant	11098-01-00	N/A*											
Shell Canada Limited Hope Creek Sour Gas Plant	16441-01-00	IR	1/week and Prior to Release	Grab									
Petro-Canada Resources Whitecourt Sour Gas Plant	10315-01-01	IR	1/week and Prior to Release	Grab									
Novagas Clearinghouse Ltd. - Zama Sour Gas Plant #3	46585-00-00	N/A*											
PanCanadian Petroleum Limited Wayne-Rosedale Sour Gas Plant	95-IND-002 17-00-01	IR	1/week and Prior to Release	Grab									
Morrison Petroleums Ltd. Wizard Lake Sour Gas Plant	95-IND-010A 1558-00-03	N/A*											
Novagas Clearinghouse Ltd - Zama Sour Gas Plant #2	95-IND-036	N/A*											
Petro-Canada Empress Straddle Gas Plant	289-01-04	IW	1/week	Grab	1/week	Grab	1/week	Grab	Must be Monitored	1/day	Grab	1/week	Grab
		IR	1/week and prior to release	Grab									
Alberta Natural Gas Company Ltd. Cochrane Extraction (Straddle) Gas Plant	979-01-01	IR	1/week and Prior to Release	Grab									

*= See Appendix for More Information
DOC= Dissolved Organic Carbon
F= Frequency
FCR= Free Chlorine Residual

IR= Industrial Runoff
IW= Industrial Wastewater
N/A= Not Applicable
RW= Receiving Water
ST= Sample Type

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Crestar Energy Inc. Vulcan Sour Gas Plant	282-01-00	IR					1/day	Grab			1/week	Grab
Vintage Resource Corp West Drumheller Sour Gas Plant	10384-01-00	IR					1/day and Prior to Release	Grab			1/week and Prior to Release	Grab
Union Pacific Resources Inc. Spirit River Sour Gas Plant	11096-01-00	IR					1/day and Prior to Release	Grab			1/week and Prior to Release	Grab
AltaGas Services Inc. - Sedgewick Sour Gas Plant	11098-01-00	N/A*										
Shell Canada Limited Hope Creek Sour Gas Plant	16441-01-00	IR					1/day and Prior to Release	Grab			1/week and Prior to Release	Grab
Petro-Canada Resources Whitecourt Sour Gas Plant	10315-01-01	IR					1/day and Prior to Release	Grab			1/week and Prior to Release	Grab
Novagas Clearinghouse Ltd. - Zama Sour Gas Plant #3	46565-00-00	N/A*										
PanCanadian Petroleum Limited Wayne-Rosedale Sour Gas Plant	95-IND-002 17-00-01	IR			1/week and Prior to Release	Grab	1/day and Prior to Release	Grab			1/week and Prior to Release	Grab
Morrison Petroleums Ltd. Wizard Lake Sour Gas Plant	95-IND-010A 1558-00-03	N/A*										
Novagas Cleaninghouse Ltd. - Zama Sour Gas Plant #2	95-IND-036	N/A*										
Petro-Canada Empress Straddle Gas Plant	289-01-04	IW	1/3 months	Grab	1/week	Grab	1/week	Grab	1/month	Grab		
		IR					1/day and prior to release	Grab				
Alberta Natural Gas Company Ltd Cochrane Extraction (Straddle) Gas Plant	979-01-01	IR					1/day and Prior to Release	Grab				

*= See Appendix for More Information
F= Frequency
IR= Industrial Runoff
IW= Industrial Wastewater

LBT= Luminescent Bacterial Test (EC50, 15 min)
N/A= Not Applicable
O&O= Oil and Other Substances
ST= Sample Type

Crestar Energy Inc. Vulcan Sour Gas Plant	282-01-00	IR	1/week and	Grab									
Vintage Resource Corp. West Drumheller Sour Gas Plant	10384-01-00	IR	1/week and Prior to Release	Grab									
Union Pacific Resources Inc. Spirit River Sour Gas Plant	11098-01-00	IR	1/week and Prior to Release	Grab									
AltaGas Services Inc. - Sedgewick Sour Gas Plant	11098-01-00	N/A*											
Shell Canada Limited Hope Creek Sour Gas Plant	16441-01-00	IR	1/week and Prior to Release	Grab									
Petro-Canada Resources Whitecourt Sour Gas Plant	10315-01-01	IR	1/week and Prior to Release	Grab									
Novagas Clearinghouse Ltd. - Zama Sour Gas Plant #3	46565-00-00	N/A*											
PanCanadian Petroleum Limited Wayne-Rosedale Sour Gas Plant	95-IND-002 17-00-01	IR	1/week and Prior to Release	Grab									
Morrison Petroleums Ltd. Wizard Lake Sour Gas Plant	95-IND-010A 1558-00-03	N/A*											
Novagas Clearinghouse Ltd. - Zama Sour Gas Plant #2	95-IND-036	N/A*											
Petro-Canada Empress Straddle Gas Plant	289-01-04	IW	1/week	Grab	1/week	Grab	1/week	Grab	Must be Monitored	1/day	Grab	1/week	Grab
		IR	1/week and prior to release	Grab									
Alberta Natural Gas Company Ltd. Cochrane Extraction (Straddle) Gas Plant	979-01-01	IR	1/week and Prior to Release	Grab									

*= See Appendix for More Information
DOC= Dissolved Organic Carbon
F= Frequency
FCR= Free Chlorine Residual

IR= Industrial Runoff
IW= Industrial Wastewater
N/A= Not Applicable
RW= Receiving Water
ST= Sample Type

Crestar Energy Inc. Vulcan Sour Gas Plant	282-01-00	IR					1/day	Grab			1/week	Grab
Vintage Resource Corp. West Drumheller Sour Gas Plant	10384-01-00	IR					1/day and Prior to Release	Grab			1/week and Prior to Release	Grab
Union Pacific Resources Inc. Spirit River Sour Gas Plant	11096-01-00	IR					1/day and Prior to Release	Grab			1/week and Prior to Release	Grab
AltaGas Services Inc. - Sedgewick Sour Gas Plant	11096-01-00	N/A*										
Shell Canada Limited Hope Creek Sour Gas Plant	16441-01-00	IR					1/day and Prior to Release	Grab			1/week and Prior to Release	Grab
Petro-Canada Resources Whitecourt Sour Gas Plant	10315-01-01	IR					1/day and Prior to Release	Grab			1/week and Prior to Release	Grab
Novagas Clearinghouse Ltd. - Zama Sour Gas Plant #3	48565-00-00	N/A*										
PanCanadian Petroleum Limited Wayne-Rosedale Sour Gas Plant	95-IND-002 17-00-01	IR			1/week and Prior to Release	Grab	1/day and Prior to Release	Grab			1/week and Prior to Release	Grab
Morrison Petroleums Ltd. Wizard Lake Sour Gas Plant	95-IND-010A 1558-00-03	N/A*										
Novagas Clearinghouse Ltd. - Zama Sour Gas Plant #2	95-IND-036	N/A*										
Petro-Canada Empress Straddle Gas Plant	269-01-04	IW	1/3 months	Grab	1/week	Grab	1/week	Grab	1/month	Grab		
		IR					1/day and prior to release	Grab				
Alberta Natural Gas Company Ltd. Cochrane Extraction (Straddle) Gas Plant	979-01-01	IR					1/day and Prior to Release	Grab				

*= See Appendix for More Information
F= Frequency
IR= Industrial Runoff
IW= Industrial Wastewater

LBT= Luminescent Bacterial Test (EC50, 15 min)
N/A= Not Applicable
O&O= Oil and Other Substances
ST= Sample Type

Crestar Energy Inc. Vulcan Sour Gas Plant	262-01-00	IR								
Vintage Resource Corp. West Drumheller Sour Gas Plant	10384-01-00	IR								
Union Pacific Resources Inc. Spirit River Sour Gas Plant	11096-01-00	IR								
AltaGas Services Inc. - Sedgewick Sour Gas Plant	11096-01-00	N/A*								
Shell Canada Limited Hope Creek Sour Gas Plant	16441-01-00	IR								
Petro-Canada Resources Whitecourt Sour Gas Plant	10315-01-01	IR								
Novagas Clearinghouse Ltd. - Zama Sour Gas Plant #3	46566-00-00	N/A*								
PanCanadian Petroleum Limited Wayne-Rosedale Sour Gas Plant	95-IND-002 17-00-01	IR								
Morrison Petroleums Ltd. Wizard Lake Sour Gas Plant	96-IND-010A 1568-00-03	N/A*								
Novagas Clearinghouse Ltd. - Zama Sour Gas Plant #2	95-IND-036	N/A*								
Petro-Canada Empress Straddle Gas Plant	289-01-04	IW								
		IR								
Alberta Natural Gas Company Ltd. Cochrane Extraction (Straddle) Gas Plant	979-01-01	IR								

*= See Appendix for More Information
BOD= Biochemical Oxygen Demand
F= Frequency
IR= Industrial Runoff
IW= Industrial Wastewater

N/A= Not Applicable
ST= Sample Type
TDS= Total Dissolved Solids
TOC= Total Organic Carbon

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Crestar Energy Inc. Vulcan Sour Gas Plant	282-01-00	IR								
Vintage Resource Corp. West Drumheller Sour Gas Plant	10384-01-00	IR								
Union Pacific Resources Inc. Spirit River Sour Gas Plant	11096-01-00	IR								
AltaGas Services Inc. - Sedgewick Sour Gas Plant	11098-01-00	N/A*								
Shell Canada Limited Hope Creek Sour Gas Plant	16441-01-00	IR								
Petro-Canada Resources Whitecourt Sour Gas Plant	10315-01-01	IR								
Novagas Clearinghouse Ltd. - Zama Sour Gas Plant #3	46565-00-00	N/A*								
PanCanadian Petroleum Limited Wayne-Rosedale Sour Gas Plant	95-IND-002 17-00-01	IR								
Morrison Petroleums Ltd. Wizard Lake Sour Gas Plant	95-IND-010A 1558-00-03	N/A*								
Novagas Clearinghouse Ltd. - Zama Sour Gas Plant #2	95-IND-036	N/A*								
Petro-Canada Empress Straddle Gas Plant	269-01-04	IW								
		IR								
Alberta Natural Gas Company Ltd. Cochrane Extraction (Straddle) Gas Plant	979-01-01	IR								

*= See Appendix for More Information
BOD= Biochemical Oxygen Demand
F= Frequency
IR= Industrial Runoff
IW= Industrial Wastewater

N/A= Not Applicable
ST= Sample Type
TDS= Total Dissolved Solids
TOC= Total Organic Carbon

TAB 1.F MEAT PROCESSING PLANTS

There are currently two meat processing plants in Alberta that discharge wastewater. One of these plants uses the wastewater for irrigation purposes.

Limits

- One meat processing plant has limits associated with Industrial Wastewater and Industrial Runoff.
- The limits for the irrigating facility are for Industrial Wastewater, and stipulate that releases are not to exceed the nutrient requirements of the crop to be grown.

Monitoring

- Both meat processing plants have monitoring on Industrial Wastewater releases.

Cargill Foods High River Red Meat Integrated Plant	683-01-06 95-IND-158	IW&IR	80	160	160	320	6.0-9.5	To be determined after study is completed	400 MPN/100 mL	160	270	Not present except in trace amounts	Not present in amounts sufficient to create a visible film or sheen	0.5 mg/L
Lakeside Packers (A Division of Lakeside Feeders Ltd.) Brooks Red Meat Processing Plant	287-01-03 95-IND-174	INDUSTRIAL (PROCESS) WASTEWATER RELEASES ARE NOT TO EXCEED THE NUTRIENT REQUIREMENTS OF THE CROP TO BE GROWN.												

BOD= Biochemical Oxygen Demand
FCR= Free Chlorine Residual
FS/VF= Floating Solids or Visible Foam
IW&IR= Industrial Wastewater and Industrial Runoff
MDA= Maximum Daily Average (for any month)
MDL= Maximum Daily Limit
MPN= Most Probable Number
NH_3-N= Ammonia-Nitrogen
NTBE= Never to be Exceeded
O&G= Oil and Grease
TSS= Total Suspended Solids

Cargill Foods High River Red Meat Integrated Plant	95-IND-158 683-01-06	IW	3/week	Composite	3/week	Composite	1/day	Totalizer	1/day	Recorder	3/week	Grab	1/month	Grab
Lakeside Packers, a Division of Lakeside feeders Ltd. Brooks Red Meat Processing Plant *See Appendix	95-IND-174 287-01-03	IW					1/day and Prior to Release	Totalizer	1/month and Prior to Release	RG	1/month and Prior to Release	RG	1/month and Prior to Release	RG

Cargill Foods High River Red Meat Integrated Plant	95-IND-158 683-01-06	IW	1/month	Composite	1/month	Composite	1/month	Composite	3/week	Grab	1/day	Grab		
Lakeside Packers, a Division of Lakeside feeders Ltd. Brooks Red Meat Processing Plant *See Appendix	95-IND-174 287-01-03	IW	1/month and Prior to Release	RG	1/month and Prior to Release	RG	1/month and Prior to Release	RG					1/month and Prior to Release	RG

BOD= Biochemical Oxygen Demand
EC= Electrical Conductivity
F= Frequency
FCR= Free Chlorine Residual
IW= Industrial Wastewater
N,P,C,S,M= Nitrate-Nitrogen, Phosphate, Calcium, Sodium, Magnesium

NH_3-N= Ammonia-Nitrogen
RG= Representative Grab
SAR= Sodium Adsorption Ratio
ST= Sample Type
TKN= Total Kjeldahl Nitrogen
TSS= Total Suspended Solids

Meat Processing Plants			Parameters and Associated Limits (All units are in kg/d, unless otherwise specified)											
Facility	Approval #	Source	BOD		TSS		pH(Units)	Phosphate	Faecal Coliform	NH_3-N		FS/VF	O&G	FCR
			MDA	MDL	MDA	MDL	NTBE		NTBE	MDA	MDL			NTBE
Cargill Foods High River Red Meat Integrated Plant	683-01-06 95-IND-158	IW&IR	80	160	160	320	6.0-9.5	To be determined after study is completed	400 MPN/100 mL	160	270	Not present except in trace amounts	Not present in amounts sufficient to create a visible film or sheen	0.5 mg/L
Lakeside Packers (A Division of Lakeside Feeders Ltd.) Brooks Red Meat Processing Plant	287-01-03 95-IND-174	INDUSTRIAL (PROCESS) WASTEWATER RELEASES ARE NOT TO EXCEED THE NUTRIENT REQUIREMENTS OF THE CROP TO BE GROWN.												

BOD= Biochemical Oxygen Demand
FCR= Free Chlorine Residual
FS/VF= Floating Solids or Visible Foam
IW&IR= Industrial Wastewater and Industrial Runoff
MDA= Maximum Daily Average (for any month)
MDL= Maximum Daily Limit

MPN= Most Probable Number
NH_3-N= Ammonia-Nitrogen
NTBE= Never to be Exceeded
O&G= Oil and Grease
TSS= Total Suspended Solids

Meat Processing Plants			Parameter (to be monitored)											
Facility	Approval #	Source	BOD		TSS		Flow		pH		NH_3-N		TKN	
			F	ST	F	ST	F	ST	F	ST	F	ST	F	ST
Cargill Foods High River Red Meat Integrated Plant	95-IND-158 683-01-06	IW	3/week	Composite	3/week	Composite	1/day	Totalizer	1/day	Recorder	3/week	Grab	1/month	Grab
Lakeside Packers, a Division of Lakeside feeders Ltd. Brooks Red Meat Processing Plant *See Appendix	95-IND-174 287-01-03	IW					1/day and Prior to Release	Totalizer	1/month and Prior to Release	RG	1/month and Prior to Release	RG	1/month and Prior to Release	RG

Facility	Approval #	Source	Parameter (to be monitored)											
			F	ST	F	ST	F	ST	F	ST	F	ST	F	ST
Cargill Foods High River Red Meat Integrated Plant	95-IND-158 683-01-06	IW	1/month	Composite	1/month	Composite	1/month	Composite	3/week	Grab	1/day	Grab		
Lakeside Packers, a Division of Lakeside feeders Ltd. Brooks Red Meat Processing Plant *See Appendix	95-IND-174 287-01-03	IW	1/month and Prior to Release	RG	1/month and Prior to Release	RG	1/month and Prior to Release	RG					1/month and Prior to Release	RG

BOD= Biochemical Oxygen Demand
EC= Electrical Conductivity
F= Frequency
FCR= Free Chlorine Residual
IW= Industrial Wastewater
N,P,C,S,M= Nitrate-Nitrogen, Phosphate, Calcium, Sodium, Magnesium

NH_3-N= Ammonia-Nitrogen
RG= Representative Grab
SAR= Sodium Adsorption Ratio
ST= Sample Type
TKN= Total Kjeldahl Nitrogen
TSS= Total Suspended Solids

TAB 1.G OILSEED PROCESSING PLANTS

There are currently two oilseed processing plants in Alberta that discharge wastewater. One falls subject to city bylaws, as it discharges to a municipal sanitary system.

Limits

- One of the facilities has limits associated with Industrial Wastewater and Industrial Runoff.

Monitoring

- One plant monitors Industrial Wastewater and Industrial Runoff.

Oilseed Processing Plants - Limits

ADM Agri-Industries Ltd. Lloydminster Oilseed Processing Plant	144-01-00	IW	INDUSTRIAL WASTEWATER IS SUBJECT TO THE CITY OF LLOYDMINSTER BYLAWS.*					
Canadian Agra Foods Inc. Sexsmith Oilseed Processing Plant	1421-01-00	IW&IR	300	50	6.0-9.5	Not present except in trace amounts	Not present except in trace amounts	Not present in amounts sufficient to create a visible film or sheen
Canamera	9773-01-00	IW&IR is subject to the Capital Region Sewage Regulations						

*= See Appendix for More Information
COD= Chemical Oxygen Demand
FS= Floating Solids
IW&IR= Industrial Wastewater and Industrial Runoff
IW= Industrial Wastewater
MDL= Maximum Daily Limit
NTBE= Not to be Exceeded
O&O= Oil and Other Substances
TSS= Total Suspended Solids
VF= Visible Foam

Oilseed Processing Plants - Limits

Oilseed Processing Plants								
			All units are in mg/L unless otherwise specified					
Facility	Approval #	Source	COD MDL	TSS MDL	pH (Units) NTBE	FS	VF	O&O
ADM Agri-Industries Ltd. Lloydminster Oilseed Processing Plant	144-01-00	IW	INDUSTRIAL WASTEWATER IS SUBJECT TO THE CITY OF LLOYDMINSTER BYLAWS.*					
Canadian Agra Foods Inc. Sexsmith Oilseed Processing Plant	1421-01-00	IW&IR	300	50	6.0-9.5	Not present except in trace amounts	Not present except in trace amounts	Not present in amounts sufficient to create a visible film or sheen
Canamera	9773-01-00	IW&IR is subject to the Capital Region Sewage Regulations						

*= See Appendix for More Information

COD= Chemical Oxygen Demand

FS= Floating Solids

IW&IR= Industrial Wastewater and Industrial Runoff

IW= Industrial Wastewater

MDL= Maximum Daily Limit

NTBE= Not to be Exceeded

O&O= Oil and Other Substances

TSS= Total Suspended Solids

VF= Visible Foam

Oilseed Processing Plants - Monitoring

Oilseed Processing Plants			Frequency of Monitoring											
Facility	Approval	Source	COD		TSS		O&O		FS		VF		pH	
			F	ST	F	ST	F	ST	F	ST	F	ST	F	ST
ADM Agri-Industries Ltd. Lloydminster Oilseed Processing Plant	144-01-00	IW	INDUSTRIAL WASTEWATER IS SUBJECT TO THE CITY OF LLOYDMINSTER BYLAWS.*											
Canadian Agra Foods Inc. Sexsmith Oilseed Processing Plant	1421-01-00	IW&IR	1/week and prior to discharge	Grab	1/week and prior to discharge	Grab	1/week and prior to discharge	Grab	1/day	Visual	1/day	Visual	1/day	Visual
Canamera	9773-01-00	Capital Region Sewage Collection												

*= See Appendix for More Information
COD= Chemical Oxygen Demand
F= Frequency
FS= Floating Solids
IW&IR= Industrial Wastewater and Industrial Runoff
IW= Industrial Wastewater
O&O= Oil and Other Substances
ST= Sample Type
TSS= Total Suspended Solids
VF= Visible Foam

Oilseed Processing Plants - Monitoring

ADM Agri-Industries Ltd. Lloydminster Oilseed Processing Plant	144-01-00	IW	INDUSTRIAL WASTEWATER IS SUBJECT TO THE CITY OF LLOYDMINSTER BYLAWS.*											
Canadian Agra Foods Inc. Sexsmith Oilseed Processing Plant	1421-01-00	IW&IR	1/week and prior to discharge	Grab	1/week and prior to discharge	Grab	1/week and prior to discharge	Grab	1/day	Visual	1/day	Visual	1/day	Visual
Canamera	9773-01-00	Capital Region Sewage Collection												

*= See Appendix for More Information

COD= Chemical Oxygen Demand

F= Frequency

FS= Floating Solids

IW&IR= Industrial Wastewater and Industrial Runoff

IW= Industrial Wastewater

O&O= Oil and Other Substances

ST= Sample Type

TSS= Total Suspended Solids

VF= Visible Foam

TAB 1.H POTATO PROCESSING PLANTS

There are currently two potato processing plants in Alberta that discharge wastewater. One of them uses Industrial Wastewater for irrigation purposes, but has limits associated with Industrial Runoff.

Limits

- One facility has limits associated with Industrial Wastewater releases.
- The other plant has limits for Industrial Runoff discharges.

Monitoring

- Both potato processing plants have monitoring programs for Industrial Wastewater.
- One potato processing plant monitors Industrial Runoff.

Pak-Wei Produce Limited Vauxhall Potato Processing Plant	10330-01-00	IW	Current Sept. 1, 1999	75 50	Current Sept. 1, 1999	150 100	5000 m^3/month							
ConAgra Limited Taber Vegetable Processing Plant	67726-00-01	IR				50		50	5	250	6.0-9.5	Not present except in trace amounts	Not present in amounts sufficient to create a visible film or sheen
		IW	INDUSTRIAL WASTEWATER RELEASES ARE NOT TO EXCEED THE NUTRIENT REQUIREMENTS OF THE CROP TO BE GROWN.										

BOD= Biochemical Oxygen Demand
CT= Chloride
COD= Chemical Oxygen Demand
FS/VF= Floating Solids or Visible Foam

IR= Industrial Runoff
IW= Industrial Wastewater
MC= Maximum Concentration
NH_3-N= Ammonia-Nitrogen

O&O= Oil and Other Substances
PWCR= Plant Water Consumption Rate
TSS= Total Suspended Solids

Pak-Wel Produce Limited Vauxhall Potatoe Processing Plant	10330-01-00	IW	1/month	Grab	1/month	Grab	After Sept. 1, 1999 1/month *	Weir	1/month	Grab
ConAgra Limited Taber Vegetable Processing Plant	67726-00-01	IW	1/week during irrigation, and 1/month*	Composite	1/week during irrigation, and 1/month*	Composite	1/day*	Totalizer	1/week during irrigation, and 1/month*	Composite
		IR			1 prior to release	Grab	1/day	Volume Estimate		

Pak-Wel Produce Limited Vauxhall Potatoe Processing Plant	10330-01-00	IW	1/month	Grab	1/day	Meter				
ConAgra Limited Taber Vegetable Processing Plant	67726-00-01	IW	1/week during irrigation, and 1/month*	Composite			1/week during irrigation, and 1/month*	Composite	1/week during irrigation, and 1/month*	Composite
		IR							Prior to release	Grab

*= See Appendix for More Frequency Information
BOD= Biochemical Oxygen Demand
F= Frequency
IR= Industrial Runoff
IW= Industrial Wastewater

NH_3-N= Ammonia-Nitrogen
PWCR= Plant Water Consumption Rate
ST= Sample Type
TSS= Total Suspended Solids

Potato Processing Plants			Parameters and Associated Limits (All units are in mg/L, unless otherwise specified)										
Facility	Approval #	Source	BOD		TSS		PWCR	COD	NH_3-N	Cl^-	pH (Units)	FS/VF	
			Effective Date	MC	Effective Date	MC	Maximum	MC	MC	MC	Maximum		
Pak-Wel Produce Limited Vauxhall Potato Processing Plant	10330-01-00	IW	Current	75	Current	150	5000 m^3/month						
			Sept. 1, 1999	50	Sept. 1, 1999	100							
ConAgra Limited Taber Vegetable Processing Plant	67726-00-01	IR				50		50	5	250	6.0-9.5	Not present except in trace amounts	Not present in amounts sufficient to create a visible film or sheen
		IW	INDUSTRIAL WASTEWATER RELEASES ARE NOT TO EXCEED THE NUTRIENT REQUIREMENTS OF THE CROP TO BE GROWN.										

BOD= Biochemical Oxygen Demand
Cl^-= Chloride
COD= Chemical Oxygen Demand
FS/VF= Floating Solids or Visible Foam

IR= Industrial Runoff
IW= Industrial Wastewater
MC= Maximum Concentration
NH_3-N= Ammonia-Nitrogen

O&O= Oil and Other Substances
PWCR= Plant Water Consumption Rate
TSS= Total Suspended Solids

Potato Processing Plants										
Facility	Approval #	Source	BOD		TSS		Discharge Flow			
			F	ST	F	ST				
Pak-Wel Produce Limited Vauxhall Potatoe Processing Plant	10330-01-00	IW	1/month	Grab	1/month	Grab	After Sept. 1, 1999 1/month *	Weir	1/month	Grab
ConAgra Limited Taber Vegetable Processing Plant	67726-00-01	IW	1/week during irrigation, and 1/month*	Composite	1/week during irrigation, and 1/month*	Composite	1/day*	Totalizer	1/week during irrigation, and 1/month*	Composite
		IR			1 prior to release	Grab	1/day	Volume Estimate		

Potato Processing Plants										
Facility	Approval #	Source	Nitrogen		PWCR		[illegible]			
			F		F					
Pak-Wel Produce Limited Vauxhall Potatoe Processing Plant	10330-01-00	IW	1/month	Grab	1/day	Meter				
ConAgra Limited Taber Vegetable Processing Plant	67726-00-01	IW	1/week during irrigation, and 1/month*	Composite			1/week during irrigation, and 1/month*	Composite	1/week during irrigation, and 1/month*	Composite
		IR							Prior to release	Grab

*= See Appendix for More Frequency Information

BOD= Biochemical Oxygen Demand

F= Frequency

IR= Industrial Runoff

IW= Industrial Wastewater

NH_3-N= Ammonia-Nitrogen

PWCR= Plant Water Consumption Rate

ST= Sample Type

TSS= Total Suspended Solids

Potato Processing			Parameters to be Monitored									
Facility	Approval #	Source	Total Phosphorus		Potassium		TDP		EC		SAR	
			F	ST	F	ST	F	ST	F	ST	F	ST
Pak-Wel Produce Limited Vauxhall Potatoe Processing Plant	10330-01-00	IW										
ConAgra Limited Taber Vegetable Processing Plant	67726-00-01	IW	1/week during irrigation, and 1/month*	Composite	1/week during irrigation, and 1/month*	Composite	1/week during irrigation, and 1/month*	Composite	1/week	Composite	1/week	Composite
		IR										

Potato Processing			Parameters to be Monitored									
Facility	Approval #	Source	pH		COD		Chloride		FS		O&O	
			F	ST	F	ST	F	ST	F	ST	F	ST
Pak-Wel Produce Limited Vauxhall Potatoe Processing Plant	10330-01-00	IW										
ConAgra Limited Taber Vegetable Processing Plant	67726-00-01	IW	1/week	Composite								
		IR	1/day	Grab	Prior to release	Grab	Prior to release	Grab	1/day	Visual	1/day	Visual

*= See Appendix for More Frequency Information
COD= Chemical Oxygen Demand
EC= Electrical Conductivity
F= Frequency
FS= Floating Solids
IR= Industrial Runoff
IW= Industrial Wastewater
O&O= Oil and Other Substances
SAR= Sodium Adsorption Ratio
ST= Sample Type
TDP= Total Dissolved Phosphorus

Pak-Wel Produce Limited Vauxhall Potatoe Processing Plant	10330-01-00	IW										
ConAgra Limited Taber Vegetable Processing Plant	67726-00-01	IW	1/week during irrigation, and 1/month*	Composite	1/week during irrigation, and 1/month*	Composite	1/week during irrigation, and 1/month*	Composite	1/week	Composite	1/week	Composite
		IR										

Pak-Wel Produce Limited Vauxhall Potatoe Processing Plant	10330-01-00	IW										
ConAgra Limited Taber Vegetable Processing Plant	67726-00-01	IW	1/week	Composite								
		IR	1/day	Grab	Prior to release	Grab	Prior to release	Grab	1/day	Visual	1/day	Visual

*= See Appendix for More Frequency Information
COD= Chemical Oxygen Demand
EC= Electrical Conductivity
F= Frequency
FS= Floating Solids
IR= Industrial Runoff
IW= Industrial Wastewater
O&O= Oil and Other Substances
SAR= Sodium Adsorption Ratio
ST= Sample Type
TDP= Total Dissolved Phosphorus

TAB 1.I POWER PLANTS

There are currently ten power plants in Alberta with limits and monitoring requirements. Four of the power plants discharge into the North Saskatchewan River, two discharge into Lake Wabamun, one releases into the Smoky River, one into the Battle River, one into the Red Deer River, one to Genesee Creek, and one to the South Saskatchewan River. Power Plants can be divided into 2 types, coal fired and natural gas powered. Seven are coal powered, while the Rossdale, Clover Bar, and Medicine Hat Thermal Power Plants are Natural Gas Powered.

Limits

- Seven of the power plants have limits associated with Industrial Wastewater discharges.
- One has limits for Industrial Runoff discharges.
- Four have limits on Cooling Waters.
- One has limits on Boiler Wet Storage Water.
- One has limits for Industrial Wastewater and Industrial Runoff.

Monitoring

- Eight of the power plants monitor Industrial Wastewater discharges.
- One monitors Industrial Runoff releases.
- One monitors Sanitary Sewage discharges.
- Three monitor Cooling Water discharges.
- One monitors Blowdown Canal Effluent.
- One monitors Boiler Wet Storage Water.

Power Plants - Limits

Power Plants			Parameters and Approximate Limits (Units are in kg/d, unless otherwise specified)									
Facility	Approval #	Source	O&G			pH (Units)	TSS			Iron		
			MDA	MDL	MC	NTBE	MDA	MDL	MC	MDA	MDL	MC
Alberta Power Limted H R Milner Thermal Electric Power Plant	9814-01-01	IW	15	30	5 mg/L	6.0-9.5	150	300	*	6	12	*
		IR	Not present in amounts sufficient to create a visible film or sheen			6.0-9.5	50 mg/L	350 mg/L				
Alberta Power Limited Battle River Thermal Electric Power Generating Plant	1512-01-01 95-IND-108	IW1	21	68		6.0-9.5	1050	2400				
Alberta Power Limited Sheerness Thermal Electric Power Generating Plant	94-IND-061B(95)	IW	375	924		6.0-9.5	3750	9245		263	647	
TransAlta Utilities Corporation Sundance Thermal Electric Power Plant	9830-01-06	IW2	140	275		6.0-9.5	1430	2750		56	110	
		IW3*				6.0-9.5			50 mg/L			3.5 mg/L
TransAlta Utilities Corporation Wabamun Thermal Electric Power Plant	10323-01-03	IW&IR	20	125		6.0-9.5	576	1130		25	50	
TransAlta Utilities Corporation Keephills Thermal Electric Power Plant	10324-01-02	IW2	144	262		6.0-9.5	2000	3183		50	100	
		IW3			10 mg/L				50 mg/L			3.5 mg/L
Edmonton Power Authority Genesee Thermal Electric Power Generating Plant	773-01-00 95-IND-044	IW	282.5	565		6.0-9.5	2825	5650		113	226	
Edmonton Power Inc Rossdale Thermal Electric Power Generating Plant	1395-01-00	BWSW				6.0-9.5						
Edmonton Power Inc Clover Bar Thermal Electric Power Generating Plant	1391-01-00	IW			10 mg/L	6.0-9.5						
		CCCW										
The City of Medicine Hat Medicine Hat Thermal Power Plant	93-WL-154 11610-00-02	CCW	Not present in amounts sufficient to create a visible film or sheen									

*= See Appendix for More Information
BWSW= Boiler Wet Storage Water
CCCW= Chlorinated Condenser Cooling Water
CCW= Condenser Cooling Water
IR= Industrial Runoff
IW&IR= Industrial Wastewater and Industrial Runoff
IW= Industrial Wastewater
IW1= Industrial Wastewater from the Ash Lagoon
IW2= Industrial Wastewater from Cooling Ponds
IW3= Industrial Wastewater from Settling Ponds
MC= Maximum Concentration
MDA= Maximum Daily Average (for any month)
MDL= Maximum Daily Limit
NTBE= Never to be Exceeded
O&G= Oil and Grease
TSS= Total Suspended Solids

Power Plants - Limits

Facility	Permit	Stream	Oil & Grease			pH	Total Suspended Solids		Total Residual Chlorine	Iron		
			MDA	MDL	MC		MDA	MDL	MC	MDA	MDL	MC
Alberta Power Limted H.R. Milner Thermal Electric Power Plant	9814-01-01	IW	15	30	5 mg/L	6.0-9.5	150	300	*	6	12	*
		IR	Not present in amounts sufficient to create a visible film or sheen			6.0-9.5	50 mg/L	350 mg/L				
Alberta Power Limited Battle River Thermal Electric Power Generating Plant	1512-01-01 95-IND-108	IW1	21	68		6.0-9.5	1050	2400				
Alberta Power Limited Sheerness Thermal Electric Power Generating Plant	94-IND-061B(95)	IW	375	924		6.0-9.5	3750	9245		263	647	
TransAlta Utilities Corporation Sundance Thermal Electric Power Plant	9830-01-06	IW2	140	275		6.0-9.5	1430	2750		56	110	
		IW3*				6.0-9.5			50 mg/L			3.5 mg/L
TransAlta Utilities Corporation Wabamun Thermal Electric Power Plant	10323-01-03	IW&IR	20	125		6.0-9.5	576	1130		25	50	
TransAlta Utilities Corporation Keephills Thermal Electric Power Plant	10324-01-02	IW2	144	262		6.0-9.5	2000	3183		50	100	
		IW3			10 mg/L				50 mg/L			3.5 mg/L
Edmonton Power Authority Genesee Thermal Electric Power Generating Plant	773-01-00 95-IND-044	IW	282.5	565		6.0-9.5	2825	5650		113	226	
Edmonton Power Inc. Rossdale Thermal Electric Power Generating Plant	1395-01-00	BWSW				6.0-9.5						
Edmonton Power Inc. Clover Bar Thermal Electric Power Generating Plant	1391-01-00	IW			10 mg/L	6.0-9.5						
		CCCW										
The City of Medicine Hat Medicine Hat Thermal Power Plant	93-WL-154 11610-00-02	CCW	Not present in amounts sufficient to create a visible film or sheen									

*= See Appendix for More Information
BWSW= Boiler Wet Storage Water
CCCW= Chlorinated Condenser Cooling Water
CCW= Condenser Cooling Water
IR= Industrial Runoff
IW&IR= Industrial Wastewater and Industrial Runoff
IW= Industrial Wastewater
IW1= Industrial Wastewater from the Ash Lagoon
IW2= Industrial Wastewater from Cooling Ponds
IW3= Industrial Wastewater from Settling Ponds
MC= Maximum Concentration
MDA= Maximum Daily Average (for any month)
MDL= Maximum Daily Limit
NTBE= Never to be Exceeded
O&G= Oil and Grease
TSS= Total Suspended Solids

Power Plants - Limits

Alberta Power Limted H.R. Milner Thermal Electric Power Plant	9814-01-01	IW	6	12	2 mg/L	0.6	1.2	0.2 mg/L	50% or greater survival in 100% industrial wastewater sample					
		IR												
Alberta Power Limited Battle River Thermal Electric Power Generating Plant	1512-01-01 95-IND-108	IW1							50% or greater survival in 100% release sample					
Alberta Power Limited Sheerness Thermal Electric Power Generating Plant	94-IND-061B(95)	IW									275	558		
TransAlta Utilities Corporation Sundance Thermal Electric Power Plant	9830-01-06	IW2	56	110		5.6	11							
		IW3*			1 mg/L									
TransAlta Utilities Corporation Wabamun Thermal Electric Power Plant	10323-01-03	IW&IR	3.2	6.4										
TransAlta Utilities Corporation Keephills Thermal Electric Power Plant	10324-01-02	IW2	50	100										
		IW3												
Edmonton Power Authority Genesee Thermal Electric Power Generating Plant	773-01-00 95-IND-044	IW	113	226										
Edmonton Power Inc. Rossdale Thermal Electric Power Generating Plant	1395-01-00	BWSW								5.0 mg/L			5.0 ug/L	
Edmonton Power Inc. Clover Bar Thermal Electric Power Generating Plant	1391-01-00	IW												
		CCCW						0.5 mg/L		0.5 mg/L				
The City of Medicine Hat Medicine Hat Thermal Power Plant	93-WL-154 11610-00-02	CCW												None other then trace amounts

ALT= Acute Lethality Test
BWSW= Boiler Wet Storage Water
CCCW= Chlorinated Condenser Cooling Water
CCW= Condenser Cooling Water
FAC= Free Available Chlorine
FS/VF= Floating Solids or Visible Foam

HR= Hydrazine Residual
IR= Industrial Runoff
IW&IR= Industrial Wastewater and Industrial Runoff
IW= Industrial Wastewater
IW1= Industrial Wastewater from the Ash Lagoon
IW2= Industrial Wastewater from Cooling Ponds

IW3= Industrial Wastewater from Settling Ponds
MC= Maximum Concentration
MDA= Maximum Daily Average (for any month)
MDL= Maximum Daily Limit
NTBE= Never to be Exceeded
TCR= Total Chlorine Residual

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Alberta Power Limted H.R. MilnerThermal Electric Power Plant	9814-01-01	IW	1/day 1/week	Recorder Composite	1/week	Composite	1/day	Totalizer	1/week	Composite	1/week	Composite
		IR	1/day during releases	Grab	1/day during releases	Grab	1/day during releases	Estimate	1/day during releases	Visual Check		
Alberta Power Limited Battle River Thermal Electric Power Generating Plant	1512-01-01 95-IND-108	IW1	1/day	Continuous	3/week	Composite	Continuous	Continuous	1/week	Composite	1/week	Composite
		SS			Once during discharge	Grab	1/day	Volume Estimate				
Alberta Power Limited Sheerness Thermal Electric Power Generating Plant	94-IND-061B(95)	IW	1/day	Composite or Continuous	1/week	Composite	1/day	Totalizer	1/week	Composite	1/week	Composite
		BCE										
TransAlta Utilities Corporation Sundance Thermal Electric Power Plant	9830-01-06	IW2	3/week	Composite	3/week	Composite	1/day	Continuous	1/week	Composite	1/week	Composite
		IW3	1/day	Grab	1/day	Grab					1/day	Grab
		IW4			1 after first day of discharge	Grab	1 after discharge	Volume Estimate				
TransAlta Utilities Corporation Wabamun Thermal Electric Power Plant	10323-01-03	IW1	3/week	Composite	3/week	Composite	Continuous	Recorder	3/week	Composite	3/week	Composite
		CW					Continuous	Recorder				
TransAlta Utilities Corporation Keephills Thermal Electric Power Plant	10324-01-02	IW2	3/week	Composite	1/week during discharge	Composite	Continuous during discharge	Recorder	1/week during discharge	Composite	1/week during discharge	Composite
		IW3			Prior to release	Grab			Prior to release	Grab	Prior to release	Grab
Edmonton Power Authority Genesee Thermal Electric Power Generating Plant	773-01-00 95-IND-044	IW	3/week	Composite	3/week	Composite	Continuous	Continuous	3/week	Composite	3/week	Composite
Edmonton Power Inc. Rossdale Thermal Electric Power Generating Plant	1395-01-00	BWSW	Prior to Release	Grab								
Edmonton Power Inc. Clover Bar Thermal Electric Power Generating Plant	1391-01-00	CCCW	Half way through chlorination or every 4 hrs	Grab								
		IW	1/week	Grab					1/week	Grab		
The City of Medicine Hat Medicine Hat Thermal Power Plant	93-WL-154 11610-00-02	CCW					1/day	Estimate				

BCE= Blowdown Canal Effluent (from regeneration lagoon)
BWSW= Boiler Wet Storage Water
CCCW= Chlorinated Condenser Cooling Water
CCW= Condenser Cooling Water
CW= Cooling Waters
F= Frequency
IR= Industrial Runoff
IW= Industrial Wastewater
IW1= Industrial Wastewater from the Ash Lagoon
IW2= Industrial Wastewater from Cooling Ponds
IW3= Industrial Wastewater from Settling Ponds
IW4= Industrial Wastewater from Stabilization Ponds
O&G= Oil and Grease
SS= Sanitary Sewage (from the sewage lagoon)
ST= Sample Type
TSS= Total Suspended Solids

Power Plants - Limits

Power Plants			Parameters and Limits (Units are in kg/d unless otherwise specified)											
Facility	Approval #	Source	Total Phosphorus			FAC			ALT (Rainbow trout)	TCR	Total Nitrogen			FSVF
			MDA	MOL	MC	MDA	MOL	MC		MDL	MDL	MDL	MC	MDL
Alberta Power Limted H.R. Milner Thermal Electric Power Plant	9814-01-01	IW	6	12	2 mg/L	0.6	1.2	0.2 mg/L	50% or greater survival in 100% industrial wastewater sample					
		IR												
Alberta Power Limited Battle River Thermal Electric Power Generating Plant	1512-01-01 95-IND-106	IW1							50% or greater survival in 100% release sample					
Alberta Power Limited Sheerness Thermal Electric Power Generating Plant	94-IND-061B(95)	IW									275	558		
TransAlta Utilities Corporation Sundance Thermal Electric Power Plant	9830-01-06	IW2	56	110		5.6	11							
		IW3*			1 mg/L									
TransAlta Utilities Corporation Wabamun Thermal Electric Power Plant	10323-01-03	IW&IR	3.2	6.4										
TransAlta Utilities Corporation Keephills Thermal Electric Power Plant	10324-01-02	IW2	50	100										
		IW3												
Edmonton Power Authority Genesee Thermal Electric Power Generating Plant	773-01-00 95-IND-044	IW	113	226										
Edmonton Power Inc. Rossdale Thermal Electric Power Generating Plant	1395-01-00	BWSW								5.0 mg/L			5.0 ug/L	
Edmonton Power Inc Clover Bar Thermal Electric Power Generating Plant	1391-01-00	IW												
		CCCW						0.5 mg/L		0.5 mg/L				
The City of Medicine Hat Medicine Hat Thermal Power Plant	93-WL-154 11610-00-02	CCW												None other than trace amounts

ALT= Acute Lethality Test
BWSW= Boiler Wet Storage Water
CCCW= Chlorinated Condenser Cooling Water
CCW= Condenser Cooling Water
FAC= Free Available Chlorine
FSVF= Floating Solids or Visible Foam
HR= Hydrazine Residual
IR= Industrial Runoff
IW&IR= Industrial Wastewater and Industrial Runoff
IW= Industrial Wastewater
IW1= Industrial Wastewater from the Ash Lagoon
IW2= Industrial Wastewater from Cooling Ponds
IW3= Industrial Wastewater from Settling Ponds
MC= Maximum Concentration
MDA= Maximum Daily Average (for any month)
MDL= Maximum Daily Limit
NTBE= Never to be Exceeded
TCR= Total Chlorine Residual

Power Plants			Parameters and Monitoring									
Facility	Approval #	Source	pH		TSS		Flow		O&G		Temp	
			F	ST	F	ST	F	ST	F	ST	F	ST
Alberta Power Limted H.R. MilnerThermal Electric Power Plant	9814-01-01	IW	1/day 1/week	Recorder Composite	1/week	Composite	1/day	Totalizer	1/week	Composite	1/week	Composite
		IR	1/day during releases	Grab	1/day during releases	Grab	1/day during releases	Estimate	1/day during releases	Visual Check		
Alberta Power Limited Battle River Thermal Electric Power Generating Plant	1512-01-01 95-IND-108	IW1	1/day	Continuous	3/week	Composite	Continuous	Continuous	1/week	Composite	1/week	Composite
		SS			Once during discharge	Grab	1/day	Volume Estimate				
Alberta Power Limited Sheerness Thermal Electric Power Generating Plant	94-IND-061B(95)	IW	1/day	Composite or Continuous	1/week	Composite	1/day	Totalizer	1/week	Composite	1/week	Composite
		BCE										
TransAlta Utilities Corporation Sundance Thermal Electric Power Plant	9830-01-06	IW2	3/week	Composite	3/week	Composite	1/day	Continuous	1/week	Composite	1/week	Composite
		IW3	1/day	Grab	1/day	Grab					1/day	Grab
		IW4			1 after first day of discharge	Grab	1 after discharge	Volume Estimate				
TransAlta Utilities Corporation Wabamun Thermal Electric Power Plant	10323-01-03	IW1	3/week	Composite	3/week	Composite	Continuous	Recorder	3/week	Composite	3/week	Composite
		CW					Continuous	Recorder				
TransAlta Utilities Corporation Keephills Thermal Electric Power Plant	10324-01-02	IW2	3/week	Composite	1/week during discharge	Composite	Continuous during discharge	Recorder	1/week during discharge	Composite	1/week during discharge	Composite
		IW3			Prior to release	Grab			Prior to release	Grab	Prior to release	Grab
Edmonton Power Authority Genesee Thermal Electric Power Generating Plant	773-01-00 95-IND-044	IW	3/week	Composite	3/week	Composite	Continuous	Continuous	3/week	Composite	3/week	Composite
Edmonton Power Inc Rossdale Thermal Electric Power Generating Plant	1395-01-00	BWSW	Prior to Release	Grab								
Edmonton Power Inc Clover Bar Thermal Electric Power Generating Plant	1391-01-00	CCCW	Half way through chlorination or every 4 hrs	Grab								
		IW	1/week	Grab					1/week	Grab		
The City of Medicine Hat Medicine Hat Thermal Power Plant	93-WL-154 11610-00-02	CCW					1/day	Estimate				

BCE= Blowdown Canal Effluent (from regeneration lagoon)
BWSW= Boiler Wet Storage Water
CCCW= Chlorinated Condenser Cooling Water
CCW= Condenser Cooling Water
CW= Cooling Waters
F= Frequency
IR= Industrial Runoff
IW= Industrial Wastewater
IW1= Industrial Wastewater from the Ash Lagoon
IW2= Industrial Wastewater from Cooling Ponds
IW3= Industrial Wastewater from Settling Ponds
IW4= Industrial Wastewater from Stabilization Ponds
O&G= Oil and Grease
SS= Sanitary Sewage (from the sewage lagoon)
ST= Sample Type
TSS= Total Suspended Solids

Power Plants			Parameters to be Monitored									
Facility	Approval #	Source	Heavy Metals		Total Phosphorus		Temperature		TDS		Dissolved Oxygen	
			F	ST	F	ST	F	ST	F	ST	F	ST
Alberta Power Limited H R MilnerThermal Electric Power Plant	9814-01-01	IW	1/year	Grab	1/week	Composite	1/day	Recorder	1/month	Composite	1/month	Grab
		IR										
Alberta Power Limited Battle River Thermal Electric Power Generating Plant	1512-01-01 95-IND-108	IW1	1/year	Composite					1/week	Composite		
		SS										
Alberta Power Limited Sheerness Thermal Electric Power Generating Plant	94-IND-061B(95)	IW			1/month	Composite	1/day	Continuous or Grab	1/month	Composite	1/month	Composite
		BCE	1/year during discharge	Composite								
TransAlta Utilities Corporation Sundance Thermal Electric Power Plant	9830-01-06	IW2	1/6 months	Grab	1/week	Composite			1/week	Composite	1/week	Grab
		IW3			1/day	Grab						
		IW4										
TransAlta Utilities Corporation Wabamun Thermal Electric Power Plant	10323-01-03	IW1	1/year	Grab	3/week	Composite						
		CW	6/year	Grab			Continuous	Recorder				
TransAlta Utilities Corporation Keephills Thermal Electric Power Plant	10324-01-02	IW2	1/year during discharge	Grab	1/month during discharge	Composite						
		IW3										
Edmonton Power Authority Genesee Thermal Electric Power Generating Plant	773-01-00 95-IND-044	IW	1/year	Composite	3/week	Composite			1/week	Composite	1/week	Grab
Edmonton Power Inc Rossdale Thermal Electric Power Generating Plant	1395-01-00	BWSW										
Edmonton Power Inc Clover Bar Thermal Electric Power Generating Plant	1391-01-00	CCCW					Half way through chlorination or every 4 hrs	Grab				
		IW										
The City of Medicine Hat Medicine Hat Thermal Power Plant	93-WL-154 11610-00-02	CCW					Inlet and outlet temperatures measured daily	Continuous				

BCE= Blowdown Canal Effluent (from regeneration lagoon)
BWSW= Boiler Wet Storage Water
CCCW= Chlorinated Condenser Cooling Water
CCW= Condenser Cooling Water
CW= Cooling Waters
F= Frequency
IR= Industrial Runoff
IW= Industrial Wastewater
IW1= Industrial Wastewater from the Ash Lagoon
IW2= Industrial Wastewater from Cooling Ponds
IW3= Industrial Wastewater from Settling Ponds
IW4= Industrial Wastewater from Stabilization Ponds
SS= Sanitary Sewage (from the sewage lagoon)
ST= Sample Type
TDS= Total Dissolved Solids

Power Plants													
Facility	Approval #	Source	Toxicity Testing		Total Nitrogen		COD		FAC		TCR		
			F	ST	F	ST	F	ST	F	ST	F	ST	
Alberta Power Limited H R MilnerThermal Electric Power Plant	9814-01-01	IW	ALT 1/3 months*	Composite or Grab			1/month	Composite	1/week*	Composite			
		IR											
Alberta Power Limited Battle River Thermal Electric Power Generating Plant	1512-01-01 95-IND-108	IW1	ALT 1/3 months*	Composite or Grab									Must be Monitored
		SS											
Alberta Power Limited Sheerness Thermal Electric Power Generating Plant	94-IND-061B(95)	IW			1/week	Composite	1/month	Composite					
		BCE											
TransAlta Utilities Corporation Sundance Thermal Electric Power Plant	9830-01-06	IW2			1/month	Composite			1/month	Grab			
		IW3											
		IW4											
TransAlta Utilities Corporation Wabamun Thermal Electric Power Plant	10323-01-03	IW1	ALT and SCLT*	Grab									Monitored for Temp
		CW											
TransAlta Utilities Corporation Keephills Thermal Electric Power Plant	10324-01-02	IW2											
		IW3											
Edmonton Power Authority Genesee Thermal Electric Power Generating Plant	773-01-00 95-IND-044	IW			1/week	Composite	1/week	Composite					
Edmonton Power Inc Rossdale Thermal Electric Power Generating Plant	1395-01-00	BWSW									Prior to Release	Grab	
Edmonton Power Inc Clover Bar Thermal Electric Power Generating Plant	1391-01-00	CCCW							Half way through chlorination or every 4 hrs	Grab	Half way through chlorination or every 4 hrs	Grab	
		IW											
The City of Medicine Hat Medicine Hat Thermal Power Plant	93-WL-154 11610-00-02	CCW											

*= See Appendix for More Frequency Information
ALT= Acute Lethality Tests
BCE= Blowdown Canal Effluent (from regeneration lagoon)
BWSW= Boiler Wet Storage Water
CCCW= Chlorinated Condenser Cooling Water
CCW= Condenser Cooling Water
COD= Chemical Oxygen Demand
CW= Cooling Waters
F= Frequency
FAC= Free Available Chlorine
IR= Industrial Runoff
IW= Industrial Wastewater
IW1= Industrial Wastewater from the Ash Lagoon
IW2= Industrial Wastewater from Cooling Ponds
IW3= Industrial Wastewater from Settling Ponds
IW4= Industrial Wastewater from Stabilization Ponds
RW= Receiving Water
SCLT= Subacute/Chronic Lethality Tests
SS= Sanitary Sewage (from the sewage lagoon)
ST= Sample Type
TCR= Total Chlorine Residual

Alberta Power Limted H.R. MilnerThermal Electric Power Plant	9814-01-01	IW	1/year	Grab	1/week	Composite	1/day	Recorder	1/month	Composite	1/month	Grab
		IR										
Alberta Power Limited Battle River Thermal Electric Power Generating Plant	1512-01-01 95-IND-108	IW1	1/year	Composite					1/week	Composite		
		SS										
Alberta Power Limited Sheerness Thermal Electric Power Generating Plant	94-IND-061B(95)	IW			1/month	Composite	1/day	Continuous or Grab	1/month	Composite	1/month	Composite
		BCE	1/year during discharge	Composite								
TransAlta Utilities Corporation Sundance Thermal Electric Power Plant	9630-01-06	IW2	1/6 months	Grab	1/week	Composite			1/week	Composite	1/week	Grab
		IW3			1/day	Grab						
		IW4										
TransAlta Utilities Corporation Wabamun Thermal Electric Power Plant	10323-01-03	IW1	1/year	Grab	3/week	Composite						
		CW	6/year	Grab			Continuous	Recorder				
TransAlta Utilities Corporation Keephills Thermal Electric Power Plant	10324-01-02	IW2	1/year during discharge	Grab	1/month during discharge	Composite						
		IW3										
Edmonton Power Authority Genesee Thermal Electric Power Generating Plant	773-01-00 95-IND-044	IW	1/year	Composite	3/week	Composite			1/week	Composite	1/week	Grab
Edmonton Power Inc. Rossdale Thermal Electric Power Generating Plant	1395-01-00	BWSW										
Edmonton Power Inc. Clover Bar Thermal Electric Power Generating Plant	1391-01-00	CCCW					Half way through chlorination or every 4 hrs	Grab				
		IW										
The City of Medicine Hat Medicine Hat Thermal Power Plant	93-WL-154 11610-00-02	CCW					Inlet and outlet temperatures measured daily	Continuous				

BCE= Blowdown Canal Effluent (from regeneration lagoon)
BWSW= Boiler Wet Storage Water
CCCW= Chlorinated Condenser Cooling Water
CCW= Condenser Cooling Water
CW= Cooling Waters
F= Frequency
IR= Industrial Runoff
IW= Industrial Wastewater
IW1= Industrial Wastewater from the Ash Lagoon
IW2= Industrial Wastewater from Cooling Ponds
IW3= Industrial Wastewater from Settling Ponds
IW4= Industrial Wastewater from Stabilization Ponds
SS= Sanitary Sewage (from the sewage lagoon)
ST= Sample Type
TDS= Total Dissolved Solids

Alberta Power Limted H.R. MilnerThermal Electric Power Plant	9814-01-01	IW	ALT 1/3 months*	Composite or Grab			1/month	Composite	1/week*	Composite			
		IR											
Alberta Power Limited Battle River Thermal Electric Power Generating Plant	1512-01-01 95-IND-108	IW1	ALT 1/3 months*	Composite or Grab									Must be Monitored
		SS											
Alberta Power Limited Sheerness Thermal Electric Power Generating Plant	94-IND-061B(95)	IW			1/week	Composite	1/month	Composite					
		BCE											
TransAlta Utilities Corporation Sundance Thermal Electric Power Plant	9630-01-06	IW2			1/month	Composite			1/month	Grab			
		IW3											
		IW4											
TransAlta Utilities Corporation Wabamun Thermal Electric Power Plant	10323-01-03	IW1	ALT and SCLT*	Grab									Monitored for Temp.
		CW											
TransAlta Utilities Corporation Keephills Thermal Electric Power Plant	10324-01-02	IW2											
		IW3											
Edmonton Power Authority Genesee Thermal Electric Power Generating Plant	773-01-00 95-IND-044	IW			1/week	Composite	1/week	Composite					
Edmonton Power Inc. Rosedale Thermal Electric Power Generating Plant	1395-01-00	BWSW									Prior to Release	Grab	
Edmonton Power Inc. Clover Bar Thermal Electric Power Generating Plant	1391-01-00	CCCW							Half way through chlorination or every 4 hrs	Grab	Half way through chlorination or every 4 hrs	Grab	
		IW											
The City of Medicine Hat Medicine Hat Thermal Power Plant	93-WL-154 11610-00-02	CCW											

*= See Appendix for More Frequency Information
ALT= Acute Lethality Tests
BCE= Blowdown Canal Effluent (from regeneration lagoon)
BWSW= Boiler Wet Storage Water
CCCW= Chlorinated Condenser Cooling Water
CCW= Condenser Cooling Water
COD= Chemical Oxygen Demand
CW= Cooling Waters
F= Frequency
FAC= Free Available Chlorine
IR= Industrial Runoff
IW= Industrial Wastewater
IW1= Industrial Wastewater from the Ash Lagoon
IW2= Industrial Wastewater from Cooling Ponds
IW3= Industrial Wastewater from Settling Ponds
IW4= Industrial Wastewater from Stabilization Ponds
RW= Receiving Water
SCLT= Subacute/Chronic Lethality Tests
SS= Sanitary Sewage (from the sewage lagoon)
ST= Sample Type
TCR= Total Chlorine Residual

Power Plants - Monitoring

[redacted]														
Alberta Power Limted H.R. MilnerThermal Electric Power Plant	9814-01-01	IW									1/week	Composite	1/month	Composite
		IR												
Alberta Power Limited Battle River Thermal Electric Power Generating Plant	1512-01-01 95-IND-108	IW1	3/week	Composite										
		SS			Once during discharge	Grab								
Alberta Power Limited Sheerness Thermal Electric Power Generating Plant	94-IND-061B(95)	IW												
		BCE	1/year during discharge	Composite			1/year during discharge	Composite						
TransAlta Utilities Corporation Sundance Thermal Electric Power Plant	9630-01-06	IW2												
		IW3					1/day	Grab						
		IW4			1 after the first day of discharge	Grab								
TransAlta Utilities Corporation Wabamun Thermal Electric Power Plant	10323-01-03	IW1												
		CW												
TransAlta Utilities Corporation Keephills Thermal Electric Power Plant	10324-01-02	IW2												
		IW3												
Edmonton Power Authority Genesee Thermal Electric Power Generating Plant	773-01-00 95-IND-044	IW												
Edmonton Power Inc. Rossdale Thermal Electric Power Generating Plant	1395-01-00	BWSW							Prior to Release	Grab				
Edmonton Power Inc. Clover Bar Thermal Electric Power Generating Plant	1391-01-00	CCCW												
		IW												
The City of Medicine Hat Medicine Hat Thermal Power Plant	93-WL-154 11610-00-02	CCW												

BCE= Blowdown Canal Effluent (from regeneration lagoon)
BOD= Biochemical Oxygen Demand
BWSW= Boiler Wet Storage Water
CCCW= Chlorinated Condenser Cooling Water
CCW= Condenser Cooling Water
CW= Cooling Waters
F= Frequency
HR= Hydrazine Residual
IR= Industrial Runoff
IW= Industrial Wastewater
IW1= Industrial Wastewater from the Ash Lagoon
IW2= Industrial Wastewater from Cooling Ponds
IW3= Industrial Wastewater from Settling Ponds
IW4= Industrial Wastewater from Stabilization Ponds
SS= Sanitary Sewage (from the sewage lagoon)
ST= Sample Type
TKN= Total Kjeldahl Nitrogen

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Alberta Power Limted H.R. MilnerThermal Electric Power Plant	9814-01-01	IW												
		IR												
Alberta Power Limited Battle River Thermal Electric Power Generating Plant	1512-01-01 95-IND-108	IW1												
		SS												
Alberta Power Limited Sheerness Thermal Electric Power Generating Plant	94-IND-061B(95)	IW												
		BCE	1/year during discharge	Composite	1/year during discharge	Composite	1/year during discharge	Composite	1/year during discharge	Composite	1/year during discharge	Composite	1/year during discharge	Composite
TransAlta Utilities Corporation Sundance Thermal Electric Power Plant	9630-01-06	IW2												
		IW3												
		IW4												
TransAlta Utilities Corporation Wabamun Thermal Electric Power Plant	10323-01-03	IW1												
		CW												
TransAlta Utilities Corporation Keephills Thermal Electric Power Plant	10324-01-02	IW2												
		IW3												
Edmonton Power Authority Genesee Thermal Electric Power Generating Plant	773-01-00 95-IND-044	IW												
Edmonton Power Inc. Rossdale Thermal Electric Power Generating Plant	1395-01-00	BWSW												
Edmonton Power Inc. Clover Bar Thermal Electric Power Generating Plant	1391-01-00	CCCW												
		IW												
The City of Medicine Hat Medicine Hat Thermal Power Plant	93-WL-154 11610-00-02	CCW												

BCE= Blowdown Canal Effluent (from regeneration lagoon)
BWSW= Boiler Wet Storage Water
Ca, Na, K, Cl, SO4= Calcium, Sodium, Potassium, Sulphate, and Chloride
CCCW= Chlorinated Condenser Cooling Water
CCW= Condenser Cooling Water
CW= Cooling Waters

F= Frequency
IR= Industrial Runoff
IW= Industrial Wastewater
IW1= Industrial Wastewater from the Ash Lagoon
IW2= Industrial Wastewater from Cooling Ponds
IW3= Industrial Wastewater from Settling Ponds

IW4= Industrial Wastewater from Stabilization Ponds
SS= Sanitary Sewage (from the sewage lagoon)
ST= Sample Type
TOC= Total Organic Carbon

Power Plants			Parameters to be Monitored											
Facility	Approval #	Source	Conductivity		BOD		Turbidity		HR		Nitrate and Nitrite		TKN	
			F	ST	F	ST	F	ST	F	ST	F	ST	F	ST
Alberta Power Limted H.R. MilnerThermal Electric Power Plant	9814-01-01	IW									1/week	Composite	1/month	Composite
		IR												
Alberta Power Limited Battle River Thermal Electric Power Generating Plant	1512-01-01 95-IND-108	IW1	3/week	Composite										
		SS			Once during discharge	Grab								
Alberta Power Limited Sheerness Thermal Electric Power Generating Plant	94-IND-061B(95)	IW												
		BCE	1/year during discharge	Composite			1/year during discharge	Composite						
TransAlta Utilities Corporation Sundance Thermal Electric Power Plant	9830-01-06	IW2												
		IW3					1/day	Grab						
		IW4			1 after the first day of discharge	Grab								
TransAlta Utilities Corporation Wabamun Thermal Electric Power Plant	10323-01-03	IW1												
		CW												
TransAlta Utilities Corporation Keephills Thermal Electric Power Plant	10324-01-02	IW2												
		IW3												
Edmonton Power Authority Genesee Thermal Electric Power Generating Plant	773-01-00 95-IND-044	IW												
Edmonton Power Inc. Rossdale Thermal Electric Power Generating Plant	1395-01-00	BWSW							Prior to Release	Grab				
Edmonton Power Inc Clover Bar Thermal Electric Power Generating Plant	1391-01-00	CCCW												
		IW												
The City of Medicine Hat Medicine Hat Thermal Power Plant	93-WL-154 11610-00-02	CCW												

BCE= Blowdown Canal Effluent (from regeneration lagoon)
BOD= Biochemical Oxygen Demand
BWSW= Boiler Wet Storage Water
CCCW= Chlorinated Condenser Cooling Water
CCW= Condenser Cooling Water
CW= Cooling Waters
F= Frequency
HR= Hydrazine Residual
IR= Industrial Runoff
IW= Industrial Wastewater
IW1= Industrial Wastewater from the Ash Lagoon
IW2= Industrial Wastewater from Cooling Ponds
IW3= Industrial Wastewater from Settling Ponds
IW4= Industrial Wastewater from Stabilization Ponds
SS= Sanitary Sewage (from the sewage lagoon)
ST= Sample Type
TKN= Total Kjeldahl Nitrogen

Power Plants			Parameters of Monitoring											
Facility	Approval #	Source	Colour		Total Alkalinity		Total Hardness		Ca, Na, K, Cl, SO4		Total Solids		TOC	
			F	ST	F	ST	F	ST	F	ST	F	ST	F	ST
Alberta Power Limted H.R. MilnerThermal Electric Power Plant	9814-01-01	IW												
		IR												
Alberta Power Limited Battle River Thermal Electric Power Generating Plant	1512-01-01 95-IND-108	IW1												
		SS												
Alberta Power Limited Sheerness Thermal Electric Power Generating Plant	94-IND-061B(95)	IW												
		BCE	1/year during discharge	Composite	1/year during discharge	Composite	1/year during discharge	Composite	1/year during discharge	Composite	1/year during discharge	Composite	1/year during discharge	Composite
TransAlta Utilities Corporation Sundance Thermal Electric Power Plant	9830-01-06	IW2												
		IW3												
		IW4												
TransAlta Utilities Corporation Wabamun Thermal Electric Power Plant	10323-01-03	IW1												
		CW												
TransAlta Utilities Corporation Keephills Thermal Electric Power Plant	10324-01-02	IW2												
		IW3												
Edmonton Power Authority Genesee Thermal Electric Power Generating Plant	773-01-00 95-IND-044	IW												
Edmonton Power Inc Rossdale Thermal Electric Power Generating Plant	1395-01-00	BWSW												
Edmonton Power Inc Clover Bar Thermal Electric Power Generating Plant	1391-01-00	CCCW												
		IW												
The City of Medicine Hat Medicine Hat Thermal Power Plant	93-WL-154 11610-00-02	CCW												

BCE= Blowdown Canal Effluent (from regeneration lagoon)
BWSW= Boiler Wet Storage Water
Ca, Na, K, Cl, SO4= Calcium, Sodium, Potassium, Sulphate, and Chloride
CCCW= Chlorinated Condenser Cooling Water
CCW= Condenser Cooling Water
CW= Cooling Waters
F= Frequency
IR= Industrial Runoff
IW= Industrial Wastewater
IW1= Industrial Wastewater from the Ash Lagoon
IW2= Industrial Wastewater from Cooling Ponds
IW3= Industrial Wastewater from Settling Ponds
IW4= Industrial Wastewater from Stabilization Ponds
SS= Sanitary Sewage (from the sewage lagoon)
ST= Sample Type
TOC= Total Organic Carbon

TAB 1.J PULP AND PAPER MILLS – BKP AND TMP

There are currently seven pulp and paper mills operating in Alberta. All of them practice direct discharge. Four of these mills are located on the Athabasca River, and a fifth is located on a tributary to the Athabasca. The two remaining pulp mills are located farther to the north, in the Peace River basin.

The seven mills can be subdivided into two general categories, according to the processes employed at each one. Four of the mills employ a Bleached Kraft Process (BKP) and three employ a Thermomechanical Process (TMP).

Limits

BKP mills:

- Three have limits associated with Industrial Wastewater discharges.
- One has limits for Industrial Runoff discharges.
- One has limits on Industrial Wastewater and Industrial Runoff discharges.

TMP mills:

- Three have limits associated with Industrial Wastewater discharges.
- One has limits for Industrial Runoff discharges.

Monitoring

BKP mills:

- Three monitor Industrial Wastewater discharges.
- Two monitor Industrial Runoff discharges.
- One monitors Industrial Wastewater and Industrial Runoff discharges.
- Two monitor Non-Contact Cooling Water discharges.
- One monitors Chiller Water.

TMP mills:

- Three monitor Industrial Wastewater discharges.
- Two monitor Non-Contact Cooling Water.
- Two monitor Industrial Runoff.

Pulp and Paper Mills - TMP - Limits

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Alberta Newsprint Company Ltd.	103-01-00	700	IW		2100	4200	3500	7000	31500	42000	50% or greater survival in 100% industrial wastewater sample	6.0-9.5 standard pH units
			IR									6.0-9.5 standard pH units
Millar Western Pulp (Whitecourt) Ltd.	107-01-07	680	IW	>/= 17 m^3/s	2040	4080	3400	6800	30600	40800	50% or greater survival in 100% industrial wastewater sample	6.0-9.5 standard pH units
				<17 m^3/s	1600	3200						
Slave Lake Pulp Corporation	108-01-09	400	IW		1050	2100	2500	5000	22500	30000	50% or greater survival in 100% industrial wastewater sample	6.0-9.5 standard pH units

ADT/day= Air Dried Tonnes of Pulp Produced per Day
ALT= Acute Lethality Test
BOD= Biochemical Oxygen Demand
IR= Industrial Runoff from the Stormwater Pond
IW= Industrial Wastewater
MDA= Maximum Daily Average (for any month)
MDL= Maximum Daily Limit
NTBE= Never to be Exceeded
TMP= Thermomechanical Pulp
TSS= Total Suspended Solids

Pulp & Paper Mills - TMP				Parameters and Associated Limits (All units are in kg/day, unless otherwise specified)								
Facility	Approval #	Production Capacity (ADT/day)	Source	BOD Flow	BOD MDA	BOD MDL	TSS MDA	TSS MDL	Colour MDA	Colour MDL	ALT (Rainbow trout)	pH NTBE
Alberta Newsprint Company Ltd.	103-01-00	700	IW		2100	4200	3500	7000	31500	42000	50% or greater survival in 100% industrial wastewater sample	6.0-9.5 standard pH units
			IR									6.0-9.5 standard pH units
Millar Western Pulp (Whitecourt) Ltd.	107-01-07	680	IW	>/= 17 m^3/s	2040	4080	3400	6800	30600	40800	50% or greater survival in 100% industrial wastewater sample	6.0-9.5 standard pH units
				<17 m^3/s	1600	3200						
Slave Lake Pulp Corporation	108-01-09	400	IW		1050	2100	2500	5000	22500	30000	50% or greater survival in 100% industrial wastewater sample	6.0-9.5 standard pH units

ADT/day= Air Dried Tonnes of Pulp Produced per Day
ALT= Acute Lethality Test
BOD= Biochemical Oxygen Demand
IR= Industrial Runoff from the Stormwater Pond
IW= Industrial Wastewater
MDA= Maximum Daily Average (for any month)
MDL= Maximum Daily Limit
NTBE= Never to be Exceeded
TMP= Thermomechanical Pulp
TSS= Total Suspended Solids

Pulp & Paper Mills - TMP				Parameters and Amounts Limits (All units are in kg/day unless otherwise specified)			
Facility	Approval #	Production Capacity (ADT/day)	Source	RFA NTBE	COD	O&G	FS/VF
Alberta Newsprint Company Ltd. 103-01-00	103-01-00	700	IW	2 mg/L		Not present in amounts sufficient to create a visible film or sheen	Not present except in trace amounts
			IR		50 mg/L	Not present in amounts sufficient to create a visible film or sheen	Not present except in trace amounts
Millar Western Pulp (Whitecourt) Ltd. 107-01-07	107-01-07	680	IW	2 mg/L		Not present in amounts sufficient to create a visible film or sheen	Not present except in trace amounts
Slave Lake Pulp Corporation 108-01-09	108-01-09	400	IW	2 mg/L		Not present in amounts sufficient to create a visible film or sheen	Not present except in trace amounts

ADT/day= Air Dried Tonnes of Pulp Produced per Day
COD= Chemical Oxygen Demand
FS/VF= Floating Solids or Visible Foam
IR= Industrial Runoff from the Stormwater Pond
IW= Industrial Wastewater
NTBE= Never to be Exceeded
O&G= Oil and Grease
RFA= Resin and Fatty Acids
TMP= Thermomechanical Pulp

Pulp & Paper Mills - TMP			Parameters to be Monitored							
Facility	Approval #	Source	BOD		TSS		Colour		RFA	
			F	ST	F	ST	F	ST	F	ST
Alberta Newsprint Company Ltd.	103-01-00	IW	3/week	Composite	1/day	Composite	1/week	Composite	1/month with trout bioassay	Grab
		IR	1/day during discharge	Grab						
		NCCW	1/month	Grab	1/month	Grab				
Millar Western Pulp (Whitecourt) Ltd.	107-01-07	IW	3/week	Composite	1/day	Composite	1/week	Composite	1/month with trout bioassay	Grab or Composite
		NCCW								
Slave Lake Pulp Corporation	108-01-09	IW	3/week	Composite	1/day	Composite	1/week	Composite	1/month with trout bioassay	Grab or Composite
		IR	Prior to discharge	Grab	Prior to discharge	Grab				

BOD= Biochemical Oxygen Demand
F= Frequency
IR= Industrial Runoff from the Stormwater Pond
IW= Industrial Wastewater
NCCW= Non-Contact Cooling Water
RFA= Resin and Fatty Acids
ST= Sample Type
TMP= Thermomechanical Pulp
TSS= Total Suspended Solids

[illegible]	[illegible]	[illegible]	[illegible]	RFA [illegible]	[illegible]	[illegible]	[illegible]
Alberta Newsprint Company Ltd. 103-01-00	103-01-00	700	IW	2 mg/L		Not present in amounts sufficient to create a visible film or sheen	Not present except in trace amounts
			IR		50 mg/L	Not present in amounts sufficient to create a visible film or sheen	Not present except in trace amounts
Millar Western Pulp (Whitecourt) Ltd. 107-01-07	107-01-07	680	IW	2 mg/L		Not present in amounts sufficient to create a visible film or sheen	Not present except in trace amounts
Slave Lake Pulp Corporation 108-01-09	108-01-09	400	IW	2 mg/L		Not present in amounts sufficient to create a visible film or sheen	Not present except in trace amounts

ADT/day= Air Dried Tonnes of Pulp Produced per Day
COD= Chemical Oxygen Demand
FS/VF= Floating Solids or Visible Foam
IR= Industrial Runoff from the Stormwater Pond
IW= Industrial Wastewater
NTBE= Never to be Exceeded
O&G= Oil and Grease
RFA= Resin and Fatty Acids
TMP= Thermomechanical Pulp

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Alberta Newsprint Company Ltd.	103-01-00	IW	3/week	Composite	1/day	Composite	1/week	Composite	1/month with trout bioassay	Grab
		IR	1/day during discharge	Grab						
		NCCW	1/month	Grab	1/month	Grab				
Millar Western Pulp (Whitecourt) Ltd.	107-01-07	IW	3/week	Composite	1/day	Composite	1/week	Composite	1/month with trout bioassay	Grab or Composite
		NCCW								
Slave Lake Pulp Corporation	108-01-09	IW	3/week	Composite	1/day	Composite	1/week	Composite	1/month with trout bioassay	Grab or Composite
		IR	Prior to discharge	Grab	Prior to discharge	Grab				

BOD= Biochemical Oxygen Demand
F= Frequency
IR= Industrial Runoff from the Stormwater Pond
IW= Industrial Wastewater
NCCW= Non-Contact Cooling Water
RFA= Resin and Fatty Acids
ST= Sample Type
TMP= Thermomechanical Pulp
TSS= Total Suspended Solids

Facility	Approval	Source	Toxicity Testing		[illegible]		Temperature		[illegible]	
			F	[illegible]	F	[illegible]	F	[illegible]	[illegible]	[illegible]
Alberta Newsprint Company Ltd.	103-01-00	IW	ALT and SCT*	Grab	1/month with trout bioassay	Grab	1/day	Grab or Instantaneous	Continuous	Recorder
		IR							1/day during discharge	Estimate
		NCCW	ALT and SCT*	Grab					Continuous	Recorder
Millar Western Pulp (Whitecourt) Ltd.	107-01-07	IW	ALT and SCT*	Grab or Composite			Continuous	Recorder	Continuous	Recorder
		NCCW							Continuous	Recorder
Slave Lake Pulp Corporation	108-01-09	IW	ALT and SCT*	Grab or Composite			Continuous	Recorder	Continuous	Recorder
		IR							During discharge event	Estimate

*= See Appendix for More Frequency Information
ALT= Acute Lethality Testing
F= Frequency
IR= Industrial Runoff from the Stormwater Pond
IW= Industrial Wastewater
NCCW= Non-Contact Cooling Water
NH_3-N= Ammonia-Nitrogen
SCT= Sublethal/Chronic Toxicity
ST= Sample Type
TMP= Thermomechanical Pulp
TT= Toxicity Testing

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Alberta Newsprint Company Ltd.	103-01-00	IW	1/week	Composite	Continuous	Recorder	Continuous	Recorder	1/year	Grab	1/week	Grab
		IR	1/day during discharge	Grab	1/day during discharge	Grab						
		NCCW	1/week	Grab	Continuous	Recorder	Continuous	Recorder				
Millar Western Pulp (Whitecourt) Ltd.	107-01-07	IW	3/week	Composite	Continuous	Recorder	Continuous	Recorder	2/year	Composite	1/week	Composite
		NCCW	1/week	Grab			Continuous	Recorder				
Slave Lake Pulp Corporation	108-01-09	IW	3/week	Composite	Continuous	Recorder	Continuous	Recorder	2/year	Composite	1/week	Composite
		IR			Prior to discharge	Grab						

COD= Chemical Oxygen Demand
F= Frequency
HM= Heavy Metals
IR= Industrial Runoff from the Stormwater Pond
IW= Industrial Wastewater
NCCW= Non-Contact Cooling Water
SC= Specific Conductance
ST= Sample Type
TMP= Thermomechanical Pulp

Pulp & Paper Mills - TMP			Parameters to be Monitored							
Facility	Approval #	Source	Toxicity Testing		NH_3-N		Temperature		Flow	
			F	ST	F	ST	F	ST	F	ST
Alberta Newsprint Company Ltd.	103-01-00	IW	ALT and SCT*	Grab	1/month with trout bioassay	Grab	1/day	Grab or Instantaneous	Continuous	Recorder
		IR							1/day during discharge	Estimate
		NCCW	ALT and SCT*	Grab					Continuous	Recorder
Millar Western Pulp (Whitecourt) Ltd.	107-01-07	IW	ALT and SCT*	Grab or Composite			Continuous	Recorder	Continuous	Recorder
		NCCW							Continuous	Recorder
Slave Lake Pulp Corporation	108-01-09	IW	ALT and SCT*	Grab or Composite			Continuous	Recorder	Continuous	Recorder
		IR							During discharge event	Estimate

*= See Appendix for More Frequency Information
ALT= Acute Lethality Testing
F= Frequency
IR= Industrial Runoff from the Stormwater Pond
IW= Industrial Wastewater
NCCW= Non-Contact Cooling Water
NH_3-N= Ammonia-Nitrogen
SCT= Sublethal/Chronic Toxicity
ST= Sample Type
TMP= Thermomechanical Pulp
TT= Toxicity Testing

Pulp & Paper Mills - TMP			Parameters to be Monitored									
Facility	Approval #	Source	COD		pH		SC		HM		Nutrients	
			F	ST	F	ST	F	ST	F	ST	F	ST
Alberta Newsprint Company Ltd.	103-01-00	IW	1/week	Composite	Continuous	Recorder	Continuous	Recorder	1/year	Grab	1/week	Grab
		IR	1/day during discharge	Grab	1/day during discharge	Grab						
		NCCW	1/week	Grab	Continuous	Recorder	Continuous	Recorder				
Millar Western Pulp (Whitecourt) Ltd.	107-01-07	IW	3/week	Composite	Continuous	Recorder	Continuous	Recorder	2/year	Composite	1/week	Composite
		NCCW	1/week	Grab			Continuous	Recorder				
Slave Lake Pulp Corporation	108-01-09	IW	3/week	Composite	Continuous	Recorder	Continuous	Recorder	2/year	Composite	1/week	Composite
		IR			Prior to discharge	Grab						

COD= Chemical Oxygen Demand
F= Frequency
HM= Heavy Metals
IR= Industrial Runoff from the Stormwater Pond
IW= Industrial Wastewater
NCCW= Non-Contact Cooling Water
SC= Specific Conductance
ST= Sample Type
TMP= Thermomechanical Pulp

Pulp & Paper Mills - TMP			Parameters to be Monitored											
Facility	Approval #	Source	OPP		BODu		TP		MI		TOC, DOC		Chelators	
			F	ST	F	ST	F	ST	F	ST	F	ST	F	ST
Alberta Newsprint Company Ltd.	103-01-00	IW	once every 5 years	Grab	1/year	Composite	1/month	Grab	2/year	Grab	1/month	Grab	1/month (if used)	Grab
		IR												
		NCCW												
Millar Western Pulp (Whitecourt) Ltd.	107-01-07	IW			4/year	Composite	1/month	Grab					1/month (if used)	Composite
		NCCW												
Slave Lake Pulp Corporation	108-01-09	IW			4/year	Composite	1/month	Grab					1/month (if used)	Composite
		IR												

BODu= Ultimate Biochemical Oxygen Demand
DOC= Dissolved Organic Carbon
F= Frequency
IR= Industrial Runoff from the Stormwater Pond
IW= Industrial Wastewater
MI= Major Ions
NCCW= Non-Contact Cooling Water
OPP= Organic Priority Pollutants
ST= Sample Type
TMP= Thermomechanical Pulp
TOC= Total Organic Carbon
TP= Total Phenols

Pulp & Paper Mills - TMP			Parameters to be Monitored										
Facility	Approval #	Source	O&G		SSS		FC		TOC or COD		RW	COD or BOD1	
			F	ST	F	ST	F	ST	F	ST		F	ST
Alberta Newsprint Company Ltd.	103-01-00	IW									Must be Monitored	1/day from Dec. 1 to Mar. 1	Composite
		IR	1/day during discharge	visual inspection									
		NCCW											
Millar Western Pulp (Whitecourt) Ltd.	107-01-07	IW			1/month	Composite					Must be Monitored		
		NCCW											
Slave Lake Pulp Corporation	108-01-09	IW			1/month	Composite	1/month	Grab			Must be Monitored		
		IR							Prior to discharge	Grab (for quick release)			

BOD1= 1 Day BOD
COD= Chemical Oxygen Demand
F= Frequency
FC= Faecal Coliforms

IR= Industrial Runoff from the Stormwater Pond
IW= Industrial Wastewater
NCCW= Non-Contact Cooling Water
O&G= Oil and Grease

RW= Receiving Water
SSS= Sulphate, Sodium, Silicate
ST= Sample Type
TMP= Thermomechanical Pulp
TOC= Total Organic Carbon

[illegible]	[illegible]	[illegible]	OPP		BOD		TP		TOC		[illegible]		[illegible]	
			F	ST	F	ST	F	ST	F	ST	F	ST	F	ST
Alberta Newsprint Company Ltd.	103-01-00	IW	once every 5 years	Grab	1/year	Composite	1/month	Grab	2/year	Grab	1/month	Grab	1/month (if used)	Grab
		IR												
		NCCW												
Millar Western Pulp (Whitecourt) Ltd.	107-01-07	IW			4/year	Composite	1/month	Grab					1/month (if used)	Composite
		NCCW												
Slave Lake Pulp Corporation	108-01-09	IW			4/year	Composite	1/month	Grab					1/month (if used)	Composite
		IR												

BODu= Ultimate Biochemical Oxygen Demand
DOC= Dissolved Organic Carbon
F= Frequency
IR= Industrial Runoff from the Stormwater Pond
IW= Industrial Wastewater
MI= Major Ions
NCCW= Non-Contact Cooling Water
OPP= Organic Priority Pollutants
ST= Sample Type
TMP= Thermomechanical Pulp
TOC= Total Organic Carbon
TP= Total Phenols

Facility	Approval #	Source	COD		SSS		FC		TOC		RW		
			F	ST	F	ST	F	ST	F	ST			
Alberta Newsprint Company Ltd.	103-01-00	IW									Must be Monitored	1/day from Dec. 1 to Mar. 1	Composite
		IR	1/day during discharge	visual inspection									
		NCCW											
Millar Western Pulp (Whitecourt) Ltd.	107-01-07	IW			1/month	Composite					Must be Monitored		
		NCCW											
Slave Lake Pulp Corporation	108-01-09	IW			1/month	Composite	1/month	Grab			Must be Monitored		
		IR							Prior to discharge	Grab (for quick release)			

BOD1= 1 Day BOD
COD= Chemical Oxygen Demand
F= Frequency
FC= Faecal Coliforms

IR= Industrial Runoff from the Stormwater Pond
IW= Industrial Wastewater
NCCW= Non-Contact Cooling Water
O&G= Oil and Grease

RW= Receiving Water
SSS= Sulphate, Sodium, Silicate
ST= Sample Type
TMP= Thermomechanical Pulp
TOC= Total Organic Carbon

Pulp & Paper Mills - BKP											
Facility	Approval #	Production Capacity (ADT/day)	Type of	BOD		Colour			AOX		
				MDA	MDL	Effective Date	MDA	MDL	Effective Date	MDA	MDL
Alberta Pacific Forest Industries Inc.	111-01-02	1500*	IW&IR	2250	4500		104000	185500		818	1390
Daishowa-Marubeni International Ltd.	115-01-02	1350*	IW	4050	8100	Current	182000	224000	Current	1400	2800
						January 1, 2000	121500	162250	January 1, 2000	880	1350
			IR								
Weldwood of Canada Limited	99-01-02	1100*	IW	3300	6600		60000	85000		800	1600
Weyerhaeuser Canada Ltd.	113-01-01	820*	IW	2460	4920	Current	73800	109060		1230	2460
						July 1, 2002	50000	70000			
						March 1, 2007	37400	47000			

*= See Appendix for More Information

ADT/day= Air Dried Tonnes of Pulp Produced per Day

AOX= Adsorbable Organic Halides

BKP= Bleached Kraft Pulp

BOD= Biochemical Oxygen Demand

MDL= Maximum Daily Limit

IW&IR= Industrial Wastewater and Industrial Runoff

IW= Industrial Wastewater

MDA= Maximum Daily Average (for any month)

IR= Industrial Runoff from the Stormwater Retention Pond

Pulp & Paper Mills - BKP				Parameters and Allowable Limits (All units are in kg/day, unless otherwise specified)							
Facility	Approval #	Production Capacity (ADT/day)	Source	BOD		Colour			AOX		
				MDA	MDL	Effective Date	MDA	MDL	Effective Date	MDA	MDL
Alberta Pacific Forest Industries Inc.	111-01-02	1500*	IW&IR	2250	4500		104000	185500		818	1390
Daishowa-Marubeni International Ltd.	115-01-02	1350*	IW	4050	8100	Current	182000	224000	Current	1400	2800
						January 1, 2000	121500	182250	January 1, 2000	880	1350
			IR								
Weldwood of Canada Limited	99-01-02	1100*	IW	3300	6600		60000	85000		800	1600
Weyerhaeuser Canada Ltd.	113-01-01	820*	IW	2460	4920	Current	73800	109060		1230	2460
						July 1, 2002	50000	70000			
						March 1, 2007	37400	47000			

*= See Appendix for More Information
ADT/day= Air Dried Tonnes of Pulp Produced per Day
AOX= Adsorbable Organic Halides
BKP= Bleached Kraft Pulp
BOD= Biochemical Oxygen Demand
MDL= Maximum Daily Limit
IW&IR= Industrial Wastewater and Industrial Runoff
IW= Industrial Wastewater
MDA= Maximum Daily Average (for any month)
IR= Industrial Runoff from the Stormwater Retention Pond

Pulp & Paper Mills - BKP				Parameters and Associated Limits (All units are in kg/day, unless otherwise specified)						
Facility	Approval #	Production Capacity (ADT/day)	Source	TSS		ALT (Rainbow trout)	pH (units)	RFA	D&F	O&G
				MDA	MDL		NTBE	NTBE	NTBE	
Alberta Pacific Forest Industries Inc.	111-01-02	1500	IW&IR	4500	9000	50% or greater survival in 100% industrial wastewater sample	6.0-9.5	2 mg/L	BDL	Not present in amounts sufficient to create a visible film or sheen
Daishowa-Marubeni International Ltd.	115-01-02	1350	IW	6750	13500	50% or greater survival in 100% industrial wastewater sample	6.0-9.5	2 mg/L	BDL	
			IR		50 mg/L		6.0-9.5			Maximum Concentration 10 mg/L
Weldwood of Canada Limited	99-01-02	1100	IW	5500	11000	50% or greater survival in 100% industrial wastewater sample	6.0-9.5	2 mg/L	BDL	Not present in amounts sufficient to create a visible film or sheen
Weyerhaeuser Canada Ltd.	113-01-01	820	IW	4100	8200	50% or greater survival in 100% industrial wastewater sample	6.0-9.5	2 mg/L	BDL	Not present in amounts sufficient to create a visible film or sheen

ADT/day= Air Dried Tonnes of Pulp Produced per Day
ALT= Acute Lethality Test
BDL= Below Detectable Limits
BKP= Bleached Kraft Pulp
D&F= Dioxins and Furans
MDL= Maximum Daily Limit
IW&IR= Industrial Wastewater and Industrial Runoff
IW= Industrial Wastewater
MDA= Maximum Daily Average (for any month)
NTBE= Not to be Exceeded
O&G= Oil and Grease
RFA= Resin and Fatty Acids
SRP= Stormwater Retention Pond
TSS= Total Suspended Solids

Pulp & Paper Mills - BKP				Parameters and Allowances (All units are in kg/day unless otherwise specified)					
Facility	Approval #	Production Capacity (ADT/day)	Source	FS/VF	COD	SCT	Mn		
							Date	MDA	MDL
Alberta Pacific Forest Industries Inc.	111-01-02	1500	IW&IR	Not present except in trace amounts					
Daishowa-Marubeni International Ltd.	115-01-02	1350	IW						
			IR		Maximum Concentration 100 mg/L				
Weldwood of Canada Limited	99-01-02	1100	IW	Not present except in trace amounts					
Weyerhaeuser Canada Ltd.	113-01-01	820	IW	Not present except in trace amounts		>6.25% no observable effects concentration*	Current	65	88
							July 1, 2002	45	68

*= See Appendix for More Details
ADT/day= Air Dried Tonnes of Pulp Produced per Day
BKP= Bleached Kraft Pulp
COD= Chemical Oxygen Demand
MDL= Maximum Daily Limit
FS/VF= Floating Solids or Visible Foam
IW&IR= Industrial Wastewater and Industrial Runoff
IW= Industrial Wastewater
MDA= Maximum Daily Average (for any month)
Mn= Manganese
SCT= Sublethal/Chronic Toxicity
SRP= Stormwater Retention Pond

Alberta Pacific Forest Industries Inc.	111-01-02	1500	IW&IR	4500	9000	50% or greater survival in 100% industrial wastewater sample	6.0-9.5	2 mg/L	BDL	Not present in amounts sufficient to create a visible film or sheen
Daishowa-Marubeni International Ltd.	115-01-02	1350	IW	6750	13500	50% or greater survival in 100% industrial wastewater sample	6.0-9.5	2 mg/L	BDL	
			IR		50 mg/L		6.0-9.5			Maximum Concentration 10 mg/L
Weldwood of Canada Limited	99-01-02	1100	IW	5500	11000	50% or greater survival in 100% industrial wastewater sample	6.0-9.5	2 mg/L	BDL	Not present in amounts sufficient to create a visible film or sheen
Weyerhaeuser Canada Ltd.	113-01-01	820	IW	4100	8200	50% or greater survival in 100% industrial wastewater sample	6.0-9.5	2 mg/L	BDL	Not present in amounts sufficient to create a visible film or sheen

ADT/day= Air Dried Tonnes of Pulp Produced per Day
ALT= Acute Lethality Test
BDL= Below Detectable Limits
BKP= Bleached Kraft Pulp
D&F= Dioxins and Furans
MDL= Maximum Daily Limit
IW&IR= Industrial Wastewater and Industrial Runoff
IW= Industrial Wastewater
MDA= Maximum Daily Average (for any month)
NTBE= Not to be Exceeded
O&G= Oil and Grease
RFA= Resin and Fatty Acids
SRP= Stormwater Retention Pond
TSS= Total Suspended Solids

Alberta Pacific Forest Industries Inc.	111-01-02	1500	IW&IR	Not present except in trace amounts					
Daishowa-Marubeni International Ltd.	115-01-02	1350	IW						
			IR		Maximum Concentration 100 mg/L				
Weldwood of Canada Limited	99-01-02	1100	IW	Not present except in trace amounts					
Weyerhaeuser Canada Ltd.	113-01-01	820	IW	Not present except in trace amounts		>6.25% no observable effects concentration*	Current	65	88
							July 1, 2002	45	68

*= See Appendix for More Details
ADT/day= Air Dried Tonnes of Pulp Produced per Day
BKP= Bleached Kraft Pulp
COD= Chemical Oxygen Demand
MDL= Maximum Daily Limit
FS/VF= Floating Solids or Visible Foam
IW&IR= Industrial Wastewater and Industrial Runoff
IW= Industrial Wastewater
MDA= Maximum Daily Average (for any month)
Mn= Manganese
SCT= Sublethal/Chronic Toxicity
SRP= Stormwater Retention Pond

Pulp and Paper Mills - BKP												
Facility	Approval	Source	BOD		TSS		Colour		[illegible]			
			F	ST	F	ST	F	ST	F	ST	F	ST
Alberta Pacific Forest Industries Inc.	111-01-02	IW&IR	3/week	Composite	1/day	Composite	1/week	Composite	1/month (with bioassays)	Grab	ALT and SCT*	Grab
Daishowa-Marubeni International Ltd.	115-01-02	IW	3/week	Composite	1/day	Composite	1/week	Composite	1/month (with bioassays)	Grab	ALT and SCT*	Grab
		IR			1/day during discharge	Grab						
		NCCW	1/month	Composite	1/month	Composite					ALT*	Grab
		CW										
Weldwood of Canada Limited	99-01-02	IW	3/week	Composite	1/day	Composite	1/week	Composite	1/month (with bioassays)	Grab	ALT and SCT*	Grab
		NCCW										
Weyerhaeuser Canada Ltd.	113-01-01	IW	3/week	Composite	1/day	Composite	1/week	Composite	1/month (with bioassays)	Grab	ALT and SCT*	Grab
		IR1	1/day during discharge	Grab	1/day during discharge	Grab						

*= See Apppendix for More Frequency Information
ALT= Acute Lethality Testing
BKP= Bleached Kraft Pulp
BOD= Biochemical Oxygen Demand
CW= Chiller Water

F= Frequency
IR= Industrial Runoff from the Stormwater Retention Pond
IR1= Industrial Runoff from the Storm Sewer
IW&IR= Industrial Wastewater and Industrial Runoff
IW= Industrial Wastewater

NCCW= Non-Contact Cooling Water
RFA= Resin and Fatty Acids
SCT= Sublethal/Chronic Toxicity
ST= Sample Type
TSS= Total Suspended Solids

Pulp & Paper Mills - BKP			Parameters to be Monitored									
Facility	Approval #	Source	BOD		TSS		Colour		RFA		Toxicity Testing	
			F	ST*	F	ST	F	ST	F	ST	F	ST
Alberta Pacific Forest Industries Inc.	111-01-02	IW&IR	3/week	Composite	1/day	Composite	1/week	Composite	1/month (with bioassays)	Grab	ALT and SCT*	Grab
Daishowa-Marubeni International Ltd.	115-01-02	IW	3/week	Composite	1/day	Composite	1/week	Composite	1/month (with bioassays)	Grab	ALT and SCT*	Grab
		IR			1/day during discharge	Grab						
		NCCW	1/month	Composite	1/month	Composite					ALT*	Grab
		CW										
Weldwood of Canada Limited	99-01-02	IW	3/week	Composite	1/day	Composite	1/week	Composite	1/month (with bioassays)	Grab	ALT and SCT*	Grab
		NCCW										
Weyerhaeuser Canada Ltd.	113-01-01	IW	3/week	Composite	1/day	Composite	1/week	Composite	1/month (with bioassays)	Grab	ALT and SCT*	Grab
		IR1	1/day during discharge	Grab	1/day during discharge	Grab						

*= See Apppendix for More Frequency Information
ALT= Acute Lethality Testing
BKP= Bleached Kraft Pulp
BOD= Biochemical Oxygen Demand
CW= Chiller Water
F= Frequency
IR= Industrial Runoff from the Stormwater Retention Pond
IR1= Industrial Runoff from the Storm Sewer
IW&IR= Industrial Wastewater and Industrial Runoff
IW= Industrial Wastewater
NCCW= Non-Contact Cooling Water
RFA= Resin and Fatty Acids
SCT= Sublethal/Chronic Toxicity
ST= Sample Type
TSS= Total Suspended Solids

M121

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Pulp and Paper Mills - BKP										
Facility	Approval	Source	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Alberta Pacific Forest Industries Inc.	111-01-02	IW&IR	1/month (with bioassays)	Grab	Continuous	Recorder	Continuous	Recorder	3/week	Composite
Daishowa-Marubeni International Ltd.	115-01-02	IW	1/month (with bioassays)	Grab	Continuous	Recorder	Continuous	Recorder	1/day	Composite
		IR					1/day during discharge	Estimate	1/day during discharge	Grab
		NCCW					Continuous (after Nov. 1, 1999)*	Recorder (after Nov. 1, 1999)*		
		CW								
Weldwood of Canada Limited	99-01-02	IW			Continuous	Recorder	Continuous	Recorder	3/week	Composite
		NCCW					1/day during discharge	Flow Meter		
Weyerhaeuser Canada Ltd.	113-01-01	IW	1/month (with bioassays)	Grab	Continuous	Recorder	Continuous	Recorder	3/week	Composite
		IR1					1/day during discharge	Water Level	1/day during discharge	Grab

*= See Apppendix for More Information
BKP= Bleached Kraft Pulp
COD= Chemical Oxygen Demand
CW= Chiller Water
F= Frequency
IR= Industrial Runoff from the Stormwater Retention Pond
IR1= Industrial Runoff from the Storm Sewer
IW&IR= Industrial Wastewater and Industrial Runoff
IW= Industrial Wastewater
NCCW= Non-Contact Cooling Water
NH_3-N= Ammonia-Nitrogen
ST= Sample Type

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Alberta Pacific Forest Industries Inc.	111-01-02	IW&IR	Continuous	Recorder	Continuous	Recorder	1/year	Grab	1/month	Grab	1/year	Grab	4/year	Composite
Daishowa-Marubeni International Ltd.	115-01-02	IW	Continuous	Recorder	Continuous	Recorder	1/year	Grab	1/two months	Grab	once every 5 years	Grab		
		IR	1/day during discharge	Grab										
		NCCW	Continuous*	Recorder*	Continuous*	Recorder*								
		CW	Continuous	Recorder	Continuous	Recorder								
Weldwood of Canada Limited	99-01-02	IW	Continuous	Recorder	Continuous	Recorder	1/year	Grab	1/month	Grab	2/approval period	Grab	1/year	Composite
		NCCW												
Weyerhaeuser Canada Ltd.	113-01-01	IW	Continuous	Recorder	Continuous	Recorder	1/year	Grab	1/month	Grab	1/year	Grab	1/year	Composite
		IR1	1/day during discharge	Grab	1/day during discharge	Grab								

*= See Apppendix for More Information
BKP= Bleached Kraft Pulp
BODu= Ultimate Biochemical Oxygen Demand
CW= Chiller Water
F= Frequency
HM= Heavy Metals
IR= Industrial Runoff from the Stormwater Retention Pond
IR1= Industrial Runoff from the Storm Sewer
IW&IR= Industrial Wastewater and Industrial Runoff
IW= Industrial Wastewater
NCCW= Non-Contact Cooling Water
OPP= Organic Priority Pollutants
ST= Sample Type

Pulp & Paper Mills - BKP			Parameters to be Monitored							
Facility	Approval #	Source	NH_3-N		Temperature		Flow		COD	
			F	ST	F	ST	F	ST	F	ST
Alberta Pacific Forest Industries Inc.	111-01-02	IW&IR	1/month (with bioassays)	Grab	Continuous	Recorder	Continuous	Recorder	3/week	Composite
Daishowa-Marubeni International Ltd.	115-01-02	IW	1/month (with bioassays)	Grab	Continuous	Recorder	Continuous	Recorder	1/day	Composite
		IR					1/day during discharge	Estimate	1/day during discharge	Grab
		NCCW					Continuous (after Nov. 1, 1999)*	Recorder (after Nov. 1, 1999)*		
		CW								
Weldwood of Canada Limited	99-01-02	IW			Continuous	Recorder	Continuous	Recorder	3/week	Composite
		NCCW					1/day during discharge	Flow Meter		
Weyerhaeuser Canada Ltd.	113-01-01	IW	1/month (with bioassays)	Grab	Continuous	Recorder	Continuous	Recorder	3/week	Composite
		IR1					1/day during discharge	Water Level	1/day during discharge	Grab

*= See Apppendix for More Information
BKP= Bleached Kraft Pulp
COD= Chemical Oxygen Demand
CW= Chiller Water
F= Frequency
IR= Industrial Runoff from the Stormwater Retention Pond
IR1= Industrial Runoff from the Storm Sewer
IW&IR= Industrial Wastewater and Industrial Runoff
IW= Industrial Wastewater
NCCW= Non-Contact Cooling Water
NH_3-N= Ammonia-Nitrogen
ST= Sample Type

Pulp & Paper Mills - BKP			Parameters to be Monitored											
Facility	Approval #	Source	pH		Specific Conductance		HM		Nutrients		OPP		BODu	
			F	ST	F	ST	F	ST	F	ST	F	ST	F	ST
Alberta Pacific Forest Industries Inc.	111-01-02	IW&IR	Continuous	Recorder	Continuous	Recorder	1/year	Grab	1/month	Grab	1/year	Grab	4/year	Composite
Daishowa-Marubeni International Ltd.	115-01-02	IW	Continuous	Recorder	Continuous	Recorder	1/year	Grab	1/two months	Grab	once every 5 years	Grab		
		IR	1/day during discharge	Grab										
		NCCW	Continuous*	Recorder*	Continuous*	Recorder*								
		CW	Continuous	Recorder	Continuous	Recorder								
Weldwood of Canada Limited	99-01-02	IW	Continuous	Recorder	Continuous	Recorder	1/year	Grab	1/month	Grab	2/approval period	Grab	1/year	Composite
		NCCW												
Weyerhaeuser Canada Ltd.	113-01-01	IW	Continuous	Recorder	Continuous	Recorder	1/year	Grab	1/month	Grab	1/year	Grab	1/year	Composite
		IR1	1/day during discharge	Grab	1/day during discharge	Grab								

*= See Apppendix for More Information
BKP= Bleached Kraft Pulp
BODu= Ultimate Biochemical Oxygen Demand
CW= Chiller Water
F= Frequency
HM= Heavy Metals
IR= Industrial Runoff from the Stormwater Retention Pond
IR1= Industrial Runoff from the Storm Sewer
IW&IR= Industrial Wastewater and Industrial Runoff
IW= Industrial Wastewater
NCCW= Non-Contact Cooling Water
OPP= Organic Priority Pollutants
ST= Sample Type

Pulp & Paper Mills - BKP			Parameters to be Monitored													
Facility	Approval #	Source	TP		Major Ions		TOC and DOC		O&G		AOX		TON		C/C	
			F	ST	F	ST	F	ST	F	ST	F	ST	F	ST	F	ST
Alberta Pacific Forest Industries Inc.	111-01-02	IW&IR	1/year	Grab	2/year	Grab	1/month	Grab	1/day	Visual Check	1/week	Composite	1/month	Grab	1/month	Grab
Daishowa-Marubeni International Ltd.	115-01-02	IW									1/week	Composite			1/two months	Grab
		IR							1/day during discharge	Grab						
		NCCW														
		CW														
Weldwood of Canada Limited	99-01-02	IW	1/year	Grab							1/week	Composite			3/year*	Grab
		NCCW														
Weyerhaeuser Canada Ltd.	113-01-01	IW	1/year	Grab	2/year	Grab	1/month	Grab			1/week	Composite	1/month	Grab	1/month	Grab
		IR1							1/day during discharge	Grab						

AOX= Adsorbable Organic Halides
BKP= Bleached Kraft Pulp
C/C= Chlorate/Chlorite
CW= Chiller Water
DOC= Dissolved Organic Carbon
F= Frequency
IR= Industrial Runoff from the Stormwater Retention Pond
IR1= Industrial Runoff from the Storm Sewer
IW&IR= Industrial Wastewater and Industrial Runoff
IW= Industrial Wastewater
NCCW= Non-Contact Cooling Water
O&G= Oil and Grease
ST= Sample Type
TOC= Total Organic Carbon
TON= Threshold Odour Number
TP= Total Phenols

Pulp & Paper Mills - BKP			Parameters to be Monitored									
Facility	Approval #	Source	CP		Toluene		Chloroform		Sulfides		Dioxins and Furans	
			F	ST	F	ST	F	ST	F	ST	F	
Alberta Pacific Forest Industries Inc.	111-01-02	IW&IR			1/month	Grab	1/two months	Grab	1/month	Grab	As per Federal Regulations	Composite
Daishowa-Marubeni International Ltd.	115-01-02	IW	1/two months*	Grab			1/two months	Grab			As per Federal Regulations	Composite
		IR										
		NCCW										
		CW										
Weldwood of Canada Limited	99-01-02	IW	3/year*	Grab			1/year	Grab			As per Federal Regulations	Composite
		NCCW										
Weyerhaeuser Canada Ltd.	113-01-01	IW	4/year	Grab			1/two months	Grab	1/month	Grab	As per Federal Regulations	Composite
		IR1										

*= See Apppendix for More Frequency Information
BKP= Bleached Kraft Pulp
CP= Chlorinated Phenolics
CW= Chiller Water
F= Frequency
IR= Industrial Runoff from the Stormwater Retention Pond
IR1= Industrial Runoff from the Storm Sewer
IW&IR= Industrial Wastewater and Industrial Runoff
IW= Industrial Wastewater
NCCW= Non Contact Cooling Water
ST= Sample Type

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Alberta Pacific Forest Industries Inc.	111-01-02	IW&IR	1/year	Grab	2/year	Grab	1/month	Grab	1/day	Visual Check	1/week	Composite	1/month	Grab	1/month	Grab
Daishowa-Marubeni International Ltd.	115-01-02	IW									1/week	Composite			1/two months	Grab
		IR							1/day during discharge	Grab						
		NCCW														
		CW														
Weldwood of Canada Limited	99-01-02	IW	1/year	Grab							1/week	Composite			3/year*	Grab
		NCCW														
Weyerhaeuser Canada Ltd.	113-01-01	IW	1/year	Grab	2/year	Grab	1/month	Grab			1/week	Composite	1/month	Grab	1/month	Grab
		IR1							1/day during discharge	Grab						

AOX= Adsorbable Organic Halides
BKP= Bleached Kraft Pulp
C/C= Chlorate/Chlorite
CW= Chiller Water
DOC= Dissolved Organic Carbon

F= Frequency
IR= Industrial Runoff from the Stormwater Retention Pond
IR1= Industrial Runoff from the Storm Sewer
IW&IR= Industrial Wastewater and Industrial Runoff
IW= Industrial Wastewater

NCCW= Non-Contact Cooling Water
O&G= Oil and Grease
ST= Sample Type
TOC= Total Organic Carbon
TON= Threshold Odour Number
TP= Total Phenols

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Alberta Pacific Forest Industries Inc.	111-01-02	IW&IR			1/month	Grab	1/two months	Grab	1/month	Grab	As per Federal Regulations	Composite
Daishowa-Marubeni International Ltd.	115-01-02	IW	1/two months*	Grab			1/two months	Grab			As per Federal Regulations	Composite
		IR										
		NCCW										
		CW										
Weldwood of Canada Limited	99-01-02	IW	3/year*	Grab			1/year	Grab			As per Federal Regulations	Composite
		NCCW										
Weyerhaeuser Canada Ltd.	113-01-01	IW	4/year	Grab			1/two months	Grab	1/month	Grab	As per Federal Regulations	Composite
		IR1										

*= See Apppendix for More Frequency Information
BKP= Bleached Kraft Pulp
CP= Chlorinated Phenolics
CW= Chiller Water
F= Frequency
IR= Industrial Runoff from the Stormwater Retention Pond
IR1= Industrial Runoff from the Storm Sewer
IW&IR= Industrial Wastewater and Industrial Runoff
IW= Industrial Wastewater
NCCW= Non-Contact Cooling Water
ST= Sample Type

Pulp & Paper Mills - BKP			Parameters to be Monitored										
Facility	Approval #	Source	Floating Solids		Visible Foam		PCB		DOC		RW	Mn (Soluble)	
			F	ST	F	ST	F	ST	F	ST		F	ST
Alberta Pacific Forest Industries Inc.	111-01-02	IW&IR	1/day	Visual Check	1/day	Visual Check							
Daishowa-Marubeni International Ltd.	115-01-02	IW					4/year In 1999	Grab or Composite					
		IR											
		NCCW											
		CW											
Weldwood of Canada Limited	99-01-02	IW							1/month	Grab	Must be Monitored		
		NCCW											
Weyerhaeuser Canada Ltd.	113-01-01	IW					1/month In 1998	Grab				1/week	Composite
		IR1											

BKP= Bleached Kraft Pulp
CW= Chiller Water
F= Frequency
IR= Industrial Runoff from the Stormwater Retention Pond
IR1= Industrial Runoff from the Storm Sewer
IW&IR= Industrial Wastewater and Industrial Runoff
IW= Industrial Wastewater
Mn= Manganese
NCCW= Non-Contact Cooling Water
PCB= Polychlorinated Biphenyls
RW= Receiving Water
ST= Sample Type

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Alberta Pacific Forest Industries Inc.	111-01-02	IW&IR	1/day	Visual Check	1/day	Visual Check							
Daishowa-Marubeni International Ltd.	115-01-02	IW					4/year in 1999	Grab or Composite					
		IR											
		NCCW											
		CW											
Weldwood of Canada Limited	99-01-02	IW							1/month	Grab	Must be Monitored		
		NCCW											
Weyerhaeuser Canada Ltd.	113-01-01	IW					1/month in 1998	Grab				1/week	Composite
		IR1											

BKP= Bleached Kraft Pulp
CW= Chiller Water
F= Frequency
IR= Industrial Runoff from the Stormwater Retention Pond
IR1= Industrial Runoff from the Storm Sewer
IW&IR= Industrial Wastewater and Industrial Runoff
IW= Industrial Wastewater
Mn= Manganese
NCCW= Non-Contact Cooling Water
PCB= Polychlorinated Biphenyls
RW= Receiving Water
ST= Sample Type

TAB 1.K REFINERIES

There are currently seven refineries (one Asphalt and five oil) in Alberta. All except one, which does not discharge into a water body, have limits and monitoring requirements. Three of the refineries discharge into the North Saskatchewan River.

Limits

- Five of the refineries have limits for Industrial Wastewater discharges.
- Two of the facilities have limits associated with Industrial Runoff releases.

Monitoring

- Five of the refineries have monitoring on Industrial Wastewater discharges.
- Two of the facilities have monitoring associated with Industrial Runoff releases.

Refineries			Parameters and Associated Limits (All units are kg/d, unless otherwise specified)								
Facility	Approval #	Source	TSS				COD				
			MODAMA	MMA	MDA	MDL	Effective Date	MODAMA	MMA	MDA	MDL
Canadian Turbo (1993) Inc. Southern Alberta Refinery - Balzac	20687-01-00	IW				30 mg/L*					
HUB Oil Company Ltd. - Calgary	9790-01-03	N/A*									
Imperial Oil - Strathcona	10192-01-03	IW1			116	334				600	937
		IW2			155*	738*				750	2070
		IR				30 mg/L					
Shell Canada Products Limited Scotford	59-01-01	IW3	284	5100 kg		355		1315	21210 kg		1774
Parkland Refining Ltd. Bowden Oil Refinery	1452-01-01	IW				50 mg/L					200 mg/L
Petro-Canada Products Edmonton Oil Refinery	10184-01-01	IW			72*	350*	Current			1000	2500
							June 1, 2001			800	2000
							June 1, 2006			600	1500
Husky Oil Operations Ltd. Lloydminster Asphalt Refinery	1427-01-01	IR				50 mg/L					

*= See Appendix for More Information
COD= Chemical Oxygen Demand
IR= Industrial Runoff
IW= Industrial Wastewater
IW1= Industrial Wastewater During Normal Runoff Periods
IW2= Industrial Wastewater During High Runoff Periods
IW3= Industrial Wastewater from the Effluent Pond

MDA= Maximum Daily Average (for any month)
MDL= Maximum Daily Limit
MMA= Maximum Monthly Amount
MODAMA= Maximum One Day A Month Amount
N/A= Not Applicable
TSS= Total Suspended Solids

Canadian Turbo (1993) Inc. Southern Alberta Refinery - Balzac	20687-01-00	IW				30 mg/L*					
HUB Oil Company Ltd. - Calgary	9790-01-03	N/A*									
Imperial Oil - Strathcona	10192-01-03	IW1			116	334				600	937
		IW2			155*	738*				750	2070
		IR				30 mg/L					
Shell Canada Products Limited Scotford	59-01-01	IW3	284	5100 kg		355		1315	21210 kg		1774
Parkland Refining Ltd. Bowden Oil Refinery	1452-01-01	IW				50 mg/L					200 mg/L
Petro-Canada Products Edmonton Oil Refinery	10184-01-01	IW			72*	350*	Current			1000	2500
							June 1, 2001			800	2000
							June 1, 2006			600	1500
Husky Oil Operations Ltd. Lloydminster Asphalt Refinery	1427-01-01	IR				50 mg/L					

*= See Appendix for More Information
COD= Chemical Oxygen Demand
IR= Industrial Runoff
IW= Industrial Wastewater
IW1= Industrial Wastewater During Normal Runoff Periods
IW2= Industrial Wastewater During High Runoff Periods
IW3= Industrial Wastewater from the Effluent Pond

MDA= Maximum Daily Average (for any month)
MDL= Maximum Daily Limit
MMA= Maximum Monthly Amount
MODAMA= Maximum One Day A Month Amount
N/A= Not Applicable
TSS= Total Suspended Solids

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Canadian Turbo (1993) Inc. Southern Alberta Refinery - Balzac	20687-01-00	IW				10 mg/L				1 mg/L				
HUB Oil Company Ltd. - Calgary	9790-01-03	N/A*												
Imperial Oil - Strathcona	10192-01-03	IW1			34	95			0.67	1			0.67	3
		IW2			46	198			0.9	2			0.9	4
		IR				10 mg/L				1 mg/L				
Shell Canada Products Limited Scotford	59-01-01	IW3	66	1050 kg		89	6.6	105 kg		8.9	3.5	36 kg		5.8
Parkland Refining Ltd. Bowden Oil Refinery	1452-01-01	IW				10 mg/L				1 mg/L				0.35 mg/L
Petro-Canada Products Edmonton Oil Refinery	10184-01-01	IW			24	60			0.5	2			0.5	1.25
Husky Oil Operations Ltd. Lloydminster Asphalt Refinery	1427-01-01	IR	Not present in amounts sufficient to create a visible film or sheen											

*= See Appendix for More Information
DS= Dissolved Sulfide
IR= Industrial Runoff
IW= Industrial Wastewater
IW1= Industrial Wastewater During Normal Runoff Periods
IW2= Industrial Wastewater During High Runoff Periods
IW3= Industrial Wastewater from the Effluent Pond
MDA= Maximum Daily Average (for any month)
MDL= Maximum Daily Limit
MMA= Maximum Monthly Amount
MODAMA= Maximum One Day A Month Amount
N/A= Not Applicable
O&G= Oil and Grease

Canadian Turbo (1993) Inc. Southern Alberta Refinery - Balzac	20687-01-00	IW		6.0-9.5					
HUB Oil Company Ltd. - Calgary	9790-01-03	N/A*							
Imperial Oil - Strathcona	10192-01-03	IW1	50% or greater survival in 100% industrial wastewater sample	6.0-9.5			68	170	
		IW2	50% or greater survival in 100% industrial wastewater sample	6.0-9.5			91	190	
		IR							
Shell Canada Products Limited Scotford	59-01-01	IW3	50% or greater survival in undiluted sample	6.0-9.5	69	1290 kg		85	
Parkland Refining Ltd. Bowden Oil Refinery	1452-01-01	IW	50% or greater survival in 100% industrial wastewater sample	6.0-9.5				5 mg/L	Maximum 1000 m3/d
Petro-Canada Products Edmonton Oil Refinery	10184-01-01	IW	50% or greater survival in 100% industrial wastewater sample	6.0-9.5			48	120	
Husky Oil Operations Ltd. Lloydminster Asphalt Refinery	1427-01-01	IR		6.0-9.5					

*= See Appendix for More Information
ALT= Acute Lethality Test
FR= Flow Rate
IR= Industrial Runoff
IW= Industrial Wastewater
IW1= Industrial Wastewater During Normal Runoff Periods
IW2= Industrial Wastewater During High Runoff Periods
IW3= Industrial Wastewater from the Effluent Pond
MDA= Maximum Daily Average (for any month)
MDL= Maximum Daily Limit
MMA= Maximum Monthly Amount
MODAMA= Maximum One Day A Month Amount
N/A= Not Applicable
NTBE= Never to be Exceeded

Refineries - Limits

Refineries														
Facility	Approval #	Source	O&G				Phenols							
			MODAMA	MMA	MDA	MDL	MODAMA	MMA	MDA	MDL	MODAMA	MMA	MDA	MDL
Canadian Turbo (1993) Inc. Southern Alberta Refinery - Balzac	20687-01-00	IW				10 mg/L				1 mg/L				
HUB Oil Company Ltd. - Calgary	9790-01-03	N/A*												
Imperial Oil - Strathcona	10192-01-03	IW1			34	95			0.67	1			0.67	3
		IW2			46	198			0.9	2			0.9	4
		IR				10 mg/L				1 mg/L				
Shell Canada Products Limited Scotford	59-01-01	IW3	66	1050 kg		89	6.6	105 kg		8.9	3.5	36 kg		5.8
Parkland Refining Ltd. Bowden Oil Refinery	1452-01-01	IW				10 mg/L				1 mg/L				0.35 mg/L
Petro-Canada Products Edmonton Oil Refinery	10184-01-01	IW			24	60			0.5	2			0.5	1.25
Husky Oil Operations Ltd. Lloydminster Asphalt Refinery	1427-01-01	IR	Not present in amounts sufficient to create a visible film or sheen											

*= See Appendix for More Information
DS= Dissolved Sulfide
IR= Industrial Runoff
IW= Industrial Wastewater
IW1= Industrial Wastewater During Normal Runoff Periods
IW2= Industrial Wastewater During High Runoff Periods
IW3= Industrial Wastewater from the Effluent Pond
MDA= Maximum Daily Average (for any month)
MDL= Maximum Daily Limit
MMA= Maximum Monthly Amount
MODAMA= Maximum One Day A Month Amount
N/A= Not Applicable
O&G= Oil and Grease

Facility	Approval	Boundary	ALT	pH (Units) NTBE	Ammonia-Nitrogen MODAMA	MMA	FR		
Canadian Turbo (1993) Inc. Southern Alberta Refinery - Balzac	20687-01-00	IW		6.0-9.5					
HUB Oil Company Ltd. - Calgary	9790-01-03	N/A*							
Imperial Oil - Strathcona	10192-01-03	IW1	50% or greater survival in 100% industrial wastewater sample	6.0-9.5			68	170	
		IW2	50% or greater survival in 100% industrial wastewater sample	6.0-9.5			91	190	
		IR							
Shell Canada Products Limited Scotford	59-01-01	IW3	50% or greater survival in undiluted sample	6.0-9.5	69	1290 kg		85	
Parkland Refining Ltd. Bowden Oil Refinery	1452-01-01	IW	50% or greater survival in 100% industrial wastewater sample	6.0-9.5				5 mg/L	Maximum 1000 m3/d
Petro-Canada Products Edmonton Oil Refinery	10184-01-01	IW	50% or greater survival in 100% industrial wastewater sample	6.0-9.5			48	120	
Husky Oil Operations Ltd. Lloydminster Asphalt Refinery	1427-01-01	IR		6.0-9.5					

*= See Appendix for More Information
ALT= Acute Lethality Test
FR= Flow Rate
IR= Industrial Runoff
IW= Industrial Wastewater
IW1= Industrial Wastewater During Normal Runoff Periods
IW2= Industrial Wastewater During High Runoff Periods
IW3= Industrial Wastewater from the Effluent Pond
MDA= Maximum Daily Average (for any month)
MDL= Maximum Daily Limit
MMA= Maximum Monthly Amount
MODAMA= Maximum One Day A Month Amount
N/A= Not Applicable
NTBE= Never to be Exceeded

Refineries			Parameters to be Monitored							
Facility	Approval #	Source	TSS		Acute Lethality Tests		Ammonia-Nitrogen		Flow/Discharge Volume	
			F	ST	F	ST	F	ST	F	ST
Canadian Turbo (1993) Inc. Southern Alberta Refinery - Balzac	20687-01-00	IW	1/day during release periods	Composite					1/day during release periods	Estimate Flow Rate
HUB Oil Company Ltd. - Calgary	9790-01-03	N/A*								
Imperial Oil - Strathcona	10192-01-03	IW1	3/week	Composite	1/month*	Grab or Composite	3/week*	Composite	Continuous	Recorder
		IW2	3/week	Composite	1/month*	Grab or Composite	3/week*	Composite	Continuous	Recorder
		IR	1/week during release periods	Grab					Continuous	Recorder
Shell Canada Products Limited Scotford	59-01-01	IW3	1/day during release periods	Composite	Rainbow trout 1/3 months*	Grab or Composite	1/day during release periods	Composite	1/day during release periods	totalizer
Parkland Refining Ltd. Bowden Oil Refinery	1452-01-01	IW	1/week and 1/day during release periods	Grab	Rainbow trout 1/release*	Grab	1/week and 1/day during release periods	Grab	1/day	Weir
Petro-Canada Products Edmonton Oil Refinery	10184-01-01	IW	3/week	Composite	1/month*	Grab	3/week*	Composite	Continuous	Recorder
Husky Oil Operations Ltd. Lloydminster Asphalt Refinery	1427-01-01	IR	1/day	Grab					1/day	Grab

*= See Appendix for More Information
F= Frequency
IR= Industrial Runoff
IW= Industrial Wastewater
IW1= Industrial Wastewater During Normal Runoff Periods
IW2= Industrial Wastewater During High Runoff Periods
IW3= Industrial Wastewater from the Effluent Pond
N/A= Not Applicable
ST= Sample Type
TSS= Total Suspended Solids

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Canadian Turbo (1993) Inc. Southern Alberta Refinery - Balzac	20687-01-00	IW	1/day during release periods	Composite					1/day during release periods	Estimate Flow Rate
HUB Oil Company Ltd. - Calgary	9790-01-03	N/A*								
Imperial Oil - Strathcona	10192-01-03	IW1	3/week	Composite	1/month*	Grab or Composite	3/week*	Composite	Continuous	Recorder
		IW2	3/week	Composite	1/month*	Grab or Composite	3/week*	Composite	Continuous	Recorder
		IR	1/week during release periods	Grab					Continuous	Recorder
Shell Canada Products Limited Scotford	59-01-01	IW3	1/day during release periods	Composite	Rainbow trout 1/3 months*	Grab or Composite	1/day during release periods	Composite	1/day during release periods	totalizer
Parkland Refining Ltd. Bowden Oil Refinery	1452-01-01	IW	1/week and 1/day during release periods	Grab	Rainbow trout 1/release*	Grab	1/week and 1/day during release periods	Grab	1/day	Weir
Petro-Canada Products Edmonton Oil Refinery	10184-01-01	IW	3/week	Composite	1/month*	Grab	3/week*	Composite	Continuous	Recorder
Husky Oil Operations Ltd. Lloydminster Asphalt Refinery	1427-01-01	IR	1/day	Grab					1/day	Grab

*= See Appendix for More Information
F= Frequency
IR= Industrial Runoff
IW= Industrial Wastewater
IW1= Industrial Wastewater During Normal Runoff Periods
IW2= Industrial Wastewater During High Runoff Periods
IW3= Industrial Wastewater from the Effluent Pond
N/A= Not Applicable
ST= Sample Type
TSS= Total Suspended Solids

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Canadian Turbo (1993) Inc. Southern Alberta Refinery - Balzac	20687-01-00	IW	1/day during release periods	Composite	1/day during release periods	Composite	1/day during release periods	Composite		
HUB Oil Company Ltd. - Calgary	9790-01-03	N/A*								
Imperial Oil - Strathcona	10192-01-03	IW1	Continuous	Recorder	3/week	Composite	3/week	Composite	3/week	Grab
		IW2	Continuous	Recorder	3/week	Composite	3/week	Composite	3/week	Grab
		IR			1/week during release periods	Grab	1/week during release periods	Grab		
Shell Canada Products Limited Scotford	59-01-01	IW3	1/day during release periods	Composite	1/day during release periods	Composite	1/day during release periods	Composite	1/day during release periods	Composite
Parkland Refining Ltd. Bowden Oil Refinery	1452-01-01	IW	1/week and 1/day during release periods	Grab	1/week and 1/day during release periods	Grab	1/week and 1/day during release periods	Grab	1/week and 1/day during release periods	Grab
Petro-Canada Products Edmonton Oil Refinery	10184-01-01	IW	Continuous	Recorder	3/week	Composite	3/week	Composite	3/week	Composite
Husky Oil Operations Ltd. Lloydminster Asphalt Refinery	1427-01-01	IR	1/day	Grab			1/day	Grab		

*= See Appendix for More Information
DS= Dissolved Sulfide
F= Frequency
IR= Industrial Runoff
IW= Industrial Wastewater
IW1= Industrial Wastewater During Normal Runoff Periods
IW2= Industrial Wastewater During High Runoff Periods
IW3= Industrial Wastewater from the Effluent Pond
N/A= Not Applicable
O&G= Oil and Grease
ST= Sample Type

Refinery	[illegible]	[illegible]	Phosphorus	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Canadian Turbo (1993) Inc. Southern Alberta Refinery - Balzac	20687-01-00	IW								
HUB Oil Company Ltd. - Calgary	9790-01-03	N/A*								
Imperial Oil - Strathcona	10192-01-03	IW1	1/month	Composite	1/month	Composite or Grab	1/week	Composite		
		IW2	1/month	Composite	1/month	Composite or Grab	1/week	Composite		
		IR								
Shell Canada Products Limited Scotford	59-01-01	IW3					1/day during release periods	Composite		
Parkland Refining Ltd. Bowden Oil Refinery	1452-01-01	IW	1/week and 1/day during release periods	Grab			1/week and 1/day during release periods	Grab		
Petro-Canada Products Edmonton Oil Refinery	10184-01-01	IW	1/month	Composite	1/month	Grab	1/week	Composite	1/month	Composite
Husky Oil Operations Ltd. Lloydminster Asphalt Refinery	1427-01-01	IR								

*= See Appendix for More Information
COD= Chemical Oxygen Demand
F= Frequency
HM= Heavy Metals
IR= Industrial Runoff
IW= Industrial Wastewater
IW1= Industrial Wastewater During Normal Runoff Periods
IW2= Industrial Wastewater During High Runoff Periods
IW3= Industrial Wastewater from the Effluent Pond
N/A= Not Applicable
ST= Sample Type

Refineries			Parameter to be Monitored							
Facility	Approval #	Source	pH		Phenols		O&G		DS	
			F	ST	F	ST	F	ST	F	ST
Canadian Turbo (1993) Inc. Southern Alberta Refinery - Balzac	20687-01-00	IW	1/day during release periods	Composite	1/day during release periods	Composite	1/day during release periods	Composite		
HUB Oil Company Ltd. - Calgary	9790-01-03	N/A*								
Imperial Oil - Strathcona	10192-01-03	IW1	Continuous	Recorder	3/week	Composite	3/week	Composite	3/week	Grab
		IW2	Continuous	Recorder	3/week	Composite	3/week	Composite	3/week	Grab
		IR			1/week during release periods	Grab	1/week during release periods	Grab		
Shell Canada Products Limited Scotford	59-01-01	IW3	1/day during release periods	Composite	1/day during release periods	Composite	1/day during release periods	Composite	1/day during release periods	Composite
Parkland Refining Ltd. Bowden Oil Refinery	1452-01-01	IW	1/week and 1/day during release periods	Grab	1/week and 1/day during release periods	Grab	1/week and 1/day during release periods	Grab	1/week and 1/day during release periods	Grab
Petro-Canada Products Edmonton Oil Refinery	10184-01-01	IW	Continuous	Recorder	3/week	Composite	3/week	Composite	3/week	Composite
Husky Oil Operations Ltd. Lloydminster Asphalt Refinery	1427-01-01	IR	1/day	Grab			1/day	Grab		

*= See Appendix for More Information
DS= Dissolved Sulfide
F= Frequency
IR= Industrial Runoff
IW= Industrial Wastewater
IW1= Industrial Wastewater During Normal Runoff Periods
IW2= Industrial Wastewater During High Runoff Periods
IW3= Industrial Wastewater from the Effluent Pond
N/A= Not Applicable
O&G= Oil and Grease
ST= Sample Type

Refineries			Parameter to be Monitored							
Facility	Approval #	Source	Phosphorus		HM		COD		Zinc	
			F	ST	F	ST	F	ST	F	ST
Canadian Turbo (1993) Inc. Southern Alberta Refinery - Balzac	20687-01-00	IW								
HUB Oil Company Ltd. - Calgary	9790-01-03	N/A*								
Imperial Oil - Strathcona	10192-01-03	IW1	1/month	Composite	1/month	Composite or Grab	1/week	Composite		
		IW2	1/month	Composite	1/month	Composite or Grab	1/week	Composite		
		IR								
Shell Canada Products Limited Scotford	59-01-01	IW3					1/day during release periods	Composite		
Parkland Refining Ltd. Bowden Oil Refinery	1452-01-01	IW	1/week and 1/day during release periods	Grab			1/week and 1/day during release periods	Grab		
Petro-Canada Products Edmonton Oil Refinery	10184-01-01	IW	1/month	Composite	1/month	Grab	1/week	Composite	1/month	Composite
Husky Oil Operations Ltd. Lloydminster Asphalt Refinery	1427-01-01	IR								

*= See Appendix for More Information
COD= Chemical Oxygen Demand
F= Frequency
HM= Heavy Metals
IR= Industrial Runoff
IW= Industrial Wastewater
IW1= Industrial Wastewater During Normal Runoff Periods
IW2= Industrial Wastewater During High Runoff Periods
IW3= Industrial Wastewater from the Effluent Pond
N/A= Not Applicable
ST= Sample Type

APPENDIX A

SECTOR SPECIFIC WASTEWATER LIMITS AND MONITORING REQUIREMENTS

CHEMICAL PLANTS
WASTEWATER LIMITS AND MONITORING REQUIREMENTS

AT Plastics Inc. – Edmonton Chemical Manufacturing Plant

Toxicity Testing – Acute Toxicity

At least once per month, a 96-hour static acute bioassay on Rainbow trout, and a 48-hour static acute bioassay using Daphnia magna from grab or composite samples must be performed. If <50% of Rainbow trout survive in 100% concentration test sample, another sample of the Storm Sewer Wastewater is measured for 96-hour multiple concentration Acute Lethality Testing using Rainbow trout. Measurement of both acute toxicity tests increases to one per week, until three consecutive Rainbow trout bioassays demonstrate 50% or greater survival. Then sampling reverts to once per month.

If <50% survive in 100% concentration sample, increased monitoring frequency and TRE (after February 28, 1999 when TRE is developed) are followed.

Celanese Canada Inc. – Edmonton Petrochemical Manufacturing Plant

The approval holder shall perform the 96-Hour Multiple Concentration Acute Lethality Test Using Rainbow Trout and the Microtox test on the same subsamples of the composite or grab samples taken.

Toxicity Testing – Acute Toxicity (Rainbow trout only)

At least once per month a 96-Hour Multiple Concentration Acute Lethality Test Using Rainbow Trout is performed. If less than 50% survive, another grab sample of the industrial wastewater is for acute lethality on rainbow trout. Sampling for acute lethality on rainbow trout increases to at least once per week thereafter. Unless otherwise directed by the Director of Pollution Control, the approval holder may revert to a sampling frequency of once per month after three consecutive tests demonstrate 50% or greater survival of the rainbow trout in the 100% test sample.

If less than 50% survive, the approval holder shall implement the most recently updated Toxicity Reduction Evaluation (TRE) Plan.

Dow Chemical Canada Inc. - Fort Saskatchewan Chemical Manufacturing Plant

Industrial Wastewater is discharged from the Liquid Effluent Ponds to the North Saskatchewan River. They are sampled at the discharge point, prior to mixing with the North Saskatchewan River or any other waters.

Flow measurement devices selected are capable of measuring flows with a maximum deviation of less than +/- 5% from true discharge rates throughout the range of expected flow volumes.

Sanitary Sewage is discharged from the Liquid Effluent pipeline system into the North Saskatchewan River.

Any CBOD results which exceed a value of 25 mg/L shall immediately be reported to the Director.

Toxicity Testing – Acute Toxicity

Acute Lethality Tests are conducted once per month, on Rainbow trout and Daphnia magna. If <50% survive, another grab sample of the industrial wastewater is analyzed. Acute lethality on Rainbow trout sampling increases to at least once per week thereafter; and a TRE Plan is developed and implemented. After three consecutive tests demonstrate 50% or greater survival, sampling frequency returns to once per month. If <50% survive, implement the TRE plant, and continue with it until completed, unless otherwise directed by the Director.

Both Acute Lethality Tests will be conducted on the same samples.

Degussa Canada Ltd. - Gibbons Hydrogen Peroxide Manufacturing Plant

Flow measurement devices are capable of measuring flows with a maximum deviation of less than +/- 5% from true discharge rates throughout the range of expected flow volumes.

Industrial Wastewater is released from the Final Effluent Sump or the 1202 sump into the North Saskatchewan River. Industrial Wastewater samples are collected at the discharge point from the Final Effluent Sump, prior to mixing with the North Saskatchewan River or any other waters.

Toxicity Testing – Acute Toxicity

CHEMICAL PLANTS
WASTEWATER LIMITS AND MONITORING REQUIREMENTS

Once per month Acute Lethality Tests on Rainbow trout and Daphnia magna will be performed. If <50% survive, another grab sample is analyzed for acute lethality on Rainbow trout. Sampling increases to at least once per week. After three consecutive tests demonstrate 50% or greater survival, sampling frequency returns to once per month. If <50% survive, the TRE plan, is implemented and continues until completed, unless otherwise directed by the Director.
Both Acute Lethality Tests are conducted on the same samples.

Geon Canada Inc. – Scotford Polyvinyl Chloride Plant
Industrial Wastewater is released to the Effluent Retention Basins, and the discharged into the North Saskatchewan River.
Industrial Wastewater is sampled prior to entering the Effluent Retention Basins. Industrial Wastewater from the Effluent Retention Basins is sampled from the circulation line.

Toxicity Testing – Acute Toxicity (Rainbow trout only)
96-hour Multiple Concentration Acute Lethality Test using Rainbow trout, and Toxicity Testing using Luminescent Bacteria are both performed once per month.
If the 100% test sample of Industrial Wastewater for the Acute Lethality Test shows acute lethality (<50% survive), another grab sample of the Industrial Wastewater is analyzed. Sampling frequency for acute lethality on Rainbow trout increases to at least once per week. After three consecutive tests demonstrate 50% or greater survival, sampling frequency returns to once per month.
If <50% survive, the TRE plan is implemented and continues until completed, unless otherwise directed by the Director.

Shell Chemicals Canada Ltd. - Scotford Chemical Manufacturing Plant (styrene monomer) and Petrochemical Manufacturing Plant (ethylene glycol)
Sanitary Sewage samples are analyzed for BOD5 and TSS prior to and after treatment. Sanitary Sewage samples are taken prior to discharge to the cooling tower basin.
Industrial Wastewater comes from the Industrial Wastewater effluent pond, and is discharged into the North Saskatchewan River.
Industrial Wastewater and Industrial Runoff from the Ethylene Glycol Plant Biotreater discharge to the North Saskatchewan River.
Treated Sanitary Sewage is sample prior to discharge to the Industrial Wastewater Effluent Pond.

Toxicity Testing – Acute Toxicity
Once per month Acute Lethality Tests on Rainbow trout and Daphnia magna will be performed. If <50% survive, another grab sample is analyzed for acute lethality on Rainbow trout. Sampling increases to at least once per week. After three consecutive tests demonstrate 50% or greater survival, sampling frequency returns to once per month. If <50% survive, the TRE plan, is implemented and continues until completed, unless otherwise directed by the Director.
Both Acute Lethality tests have to be performed on the same sample.

NOVA Chemicals Ltd. – Joffre Petrochemical and Chemical Manufacturing Plant
Retention Ponds discharge to the cooling tower, the Effluent Pond, and the Red Deer River via a creek.
Discharge from the Retention Ponds to the Red Deer River will be monitored throughout the release period.
Discharge from the Retention Pond into the Effluent Pond will be monitored for the following when discharges occur: Flow, Total Phosphorus, TSS, and pH.
Effluent Pond discharges are sampled at the discharge point from the final Effluent Pond prior to mixing with the Red deer River, or any other waters.
Retention Pond discharges are sampled at the discharge point from the Retention Pond, prior to mixing with the Red Deer River via a creek.

Toxicity Testing - Acute Toxicity

Once per month Acute Lethality Tests on Rainbow trout and Daphnia magna will be performed on grab samples. If <50% survive, another grab sample is analyzed for acute lethality on Rainbow trout. Sampling increases to at least once per week, and the TRE Plan is implemented. After three consecutive tests demonstrate 50% or greater survival, sampling frequency returns to once per month.

Chronic Toxicity
Chronic Toxicity tests using Daphnia (or Ceriodaphnia), Selenastrum, and fathead minnows are performed once every three months on grab samples.

Union Carbide Canada Inc. – Prentiss Chemical Manufacturing Plant
Industrial Wastewater
Industrial Wastewater is sampled at the final discharge to the Red Deer River.
Until the water recovery system is in full operation, only treated Industrial Wastewater from Ethylene Glycol Plant 1 and Ethylene Glycol Plant 2 final effluent sump can be discharged into the Red Deer River.
After the wastewater recovery system is in full operation treated Industrial Wastewater from the water recovery system and demineralization regeneration discharge can be released to the Red Deer River (when the wastewater recovery system is operating).
After the wastewater recovery system is in full operation treated Industrial Wastewater from the water recovery system bypass and demineralization regeneration discharge can be released to the Red Deer River (when the wastewater recovery system is shut down).

Industrial Runoff
Industrial Runoff is sampled from the non-process area Industrial Runoff collection pond.

General
Prior to startup of Polyethylene Plant, the all Industrial Wastewater and Industrial Runoff releases from Industrial Runoff collection pond are monitored.
Once operation of Polyethylene Plant commences, intake water from the Red Deer River will be monitored.
Once operation of Polyethylene Plant commences, contents of the Industrial Runoff collection pond are monitored, prior to discharging to Jones Creek.
Treated domestic wastewater is used for irrigation purposes.

Toxicity Testing – Acute Toxicity (Rainbow trout only)
Acute Lethality Tests on Rainbow trout must be conducted once per month. If the 100% test sample of Industrial Wastewater shows less than 50% survival, another grab sample is analyzed for acute lethality on Rainbow trout. Sampling increases to at least once per week, and the TRE Plan is implemented. Once at least three consecutive tests demonstrate 50% or greater survival, sampling returns to once per month.

Methanex Corporation – Medicine Hat Methanol Plant
Industrial Wastewater is released into the City of Medicine Hat sanitary system, therefore no monitoring requirements or limits are associated with this facility.

Sterling Pulp Chemicals Ltd. – Grande Prairie Sodium Chlorate Plant
Cooling Water and Industrial Wastewater are not directly discharged to a waterbody, so they have no associated limits at this facility.
All Industrial Wastewater is recycled or reused within the plant or shall be disposed of at a facility as authorized in writing by the Director.
Cooling Water Blowdown shall be discharged via pipeline to the Weyerhaeuser Grande Prairie Pulp Mill treatment facilities.

CXY Chemicals Canada Ltd. – Bruderheim Chemical Manufacturing Plant
There are no limits associated with this facility. There are monitoring requirements.

CHEMICAL PLANTS
WASTEWATER LIMITS AND MONITORING REQUIREMENTS

The Industrial Runoff pond is sampled ten days or less prior to any release from the Industrial Runoff pond. If releases continue for more than one week, the Industrial Runoff pond is sampled weekly.
Industrial Runoff is used as a process water supply, or discharged to a brine well, or released from the Industrial Runoff pond to the surrounding watershed with prior written authorization from the Director.
Industrial Wastewater can be discharged into plant brine wells. These brine wells are monitored.

COAL MINES
WASTEWATER LIMITS AND MONITORING REQUIREMENTS

Mountain Mines

Most of the mountain coal mine approvals are currently being renewed, and will hopefully be standardized according to the Alberta Coal Mining Wastewater Guidelines (1998).
Industrial Wastewater handling facilities include major and minor ponds.
For all mountain coal mines, TSS limits are waived for a period of 48 hours after a storm event has occurred at the mine.

Luscar Ltd. – Gregg River Coal Mine and Processing Plant

Industrial Wastewater is directed to settling ponds which capture Industrial Wastewater and then discharge to the surrounding watershed.

Cardinal River Coals Ltd. – Cardinal River Coal Mine

Luscar Creek is monitored yearly.

Obed Mountain Coal Ltd. – Obed Mountain Coal Mine

Receiving Water will be monitored with grab samples yearly between June 15 and September 15.

Luscar Sterco (1977) Ltd. – Luscar Sterco (Coal Valley) Coal Mine

Receiving Water will be monitored with grab samples yearly between June 15 and September 15.

Smoky River Coal Limited – Smoky River Coal Mine

Sanitary Sewage discharge will be directed to the Plant site settling pond.
Between June 15 and September 15, grab samples shall be taken from the Sheep Creek (Receiving Water) and analyzed.

Prairie Mines

Once a year Comprehensive monitoring involves taking a sample and anyalyzing it for BOD, BTEX, Colour, Oil and Grease, Phenols, Total Phosphorus, Dissolved Oxygen, TDS, Temperature, Total Sulfide, TSS, and inorganic parameters.

Luscar Ltd. – Sheerness Coal Mine

TSS limits shall be waived for a period of 48 hours after a storm event has occurred at the mine.
Industrial Wastewater is discharged from the wastewater handling facilities.
One mine wastewater handling facility is sampled for a Once a year Comprehensive analysis.

Forestburg Collieries (1984) Ltd. – Paintearth Coal Mine

Industrial Wastewater is discharged from the Industrial Wastewater handling facilities.
Sanitary Sewage is directed to a sewage lagoon, where it can be discharged.

Manalta Coal Ltd. - Vesta Coal Mine

Settleable Solids limits shall be waived for a period of 48 hours after a storm event has occurred at the mine.
Industrial Wastewater discharges from Settling ponds will be sampled on a yearly basis for a Once a Year Comprehensive analysis.

Manalta Coal Ltd. – Montgomery Coal Mine

TSS limits shall be waived for a period of 48 hours after a storm event has occurred at the mine.

COAL MINES
WASTEWATER LIMITS AND MONITORING REQUIREMENTS

TransAlta Utilities Corporation – Whitewood Coal Mine

Industrial Wastewater is discharged from the Wabamun drainage to the TransAlta Utilities Corporation Wabamun Power Plant Wet Ash Lagoon, or to the Lac Ste. Anne drainage.
Discharges to the Lac Ste. Anne drainage have limits associated with them.
TSS limits shall be waived for a period of 48 hours after a storm event has occurred at the mine.
Each separate discharge stream in the Lac Ste. Anne drainage will be sampled for comprehensive parameters on a yearly basis (during August, September, or October).

TransAlta Utilities Corporation - Highvale Coal Mine

All Industrial Wastewater in the Industrial Wastewater handling facilities shall be directed to the Sundance Cooling Pond, so there are no limits or monitoring associated with this facility.

Edmonton Power Inc. – Genesee Coal Mine

There are no limits associated with wastewater at this facility, as it is discharged to the Genesee Power Plant systems.
Industrial wastewater is sampled on a yearly basis and comprehensive analysis is performed.

FERTILIZER MANUFACTURING PLANTS
WASTEWATER LIMITS AND MONITORING REQUIREMENTS

Agrium Products Inc. – Fort Saskatchewan Fertilizer Manufacturing Plant
There are no limits associated with the wastewater, as this facility discharges to the Sherrit wastewater system. All discharges are considered under the Sherritt International approval.

Agrium Products Inc. – Redwater Fertilizer Manufacturing Plant
Industrial Wastewater is released from the settling pond via pipeline to the North Saskatchewan River. Industrial Wastewater discharges are sampled prior to mixing with the North Saskatchewan River or any other waters.

Toxicity Testing – Acute Toxicity
Industrial Wastewater is sampled once a month for 96-hour 100% concentration Acute Lethality Test using Rainbow trout, and 48-hour static Acute Lethality Test using Daphnia magna.
If 50% or less survive the acute lethality test, monitoring frequency increases to at least once per week. Once three consecutive tests demonstrate >50% survival the sampling frequency reverts to once per month.

Agrium Products Inc. – Carseland Manufacturing Plant
There are no limits associated with the wastewater because it is used for irrigation, and not directly released to a waterbody.
Industrial Wastewater is released to the Evaporation Pond or the Irrigation Pond. Industrial Wastewater from the Irrigation Pond is used for irrigation onto arable land.
Industrial Runoff is collected in the Stormwater Pond and directed to the Irrigation Pond or Evaporation Pond.
Receiving Waters (12 Mile Coulee) are monitored.
Industrial Wastewater is sampled once a month in May, June, July, August, and September. (Sampling occurs during irrigation, which only occurs during these months).
Heavy metals are sampled for once a year, in the spring.
The results of the monitoring are to be compared to the Canadian water quality guidelines for irrigation.

Canadian Fertilizers Limited – Medicine Hat Fertilizer Manufacturing Plant
Discharges from the equalization pond include sanitary sewage and process wastewater. Discharges from the equalization pond shall be directly to the South Saskatchewan River.
Industrial Wastewater samples will be taken prior to equalization pond discharges mixing with the South Saskatchewan River or any other waters.

Toxicity Testing – Acute Toxicity
96-hour static acute bioassays using Rainbow trout will be performed at least once per calendar month. 48-hour static acute lethality tests using Daphnia magna will be conducted on the same samples as the 96-hour bioassay, at least once per calendar month.

Sherritt International Corporation
Industrial wastewater and runoff is directed to the Effluent Management System consisting of 2 stormwater ponds, lime precipitator, an ammonia stripper absorption column and three effluent ponds. Discharge occurs daily to the North Saskatchewan River.

Toxicity Testing – Acute Toxicity
96-hour acute bioassays using Rainbow trout will be performed at least once per calendar month. 48-hour static acute lethality tests using Daphnia magna will be conducted on the same samples as the 96-hour bioassay, at least once per calendar month.

FOUNDRY
WASTEWATER LIMITS AND MONITORING REQUIREMENTS

AltaSteel Ltd. – Edmonton Steel Producing Plant

Industrial Wastewater is discharged from the Industrial Wastewater control facility directly to Gold Bar Creek. Discharge to Gold Bar Creek can occur only under conditions which permit the free flow of liquid effluent to the North Saskatchewan River.

Industrial Wastewater is sampled prior to the discharge mixing with Gold Bar Creek or any other waters.

Toxicity Testing - Acute Toxicity

A 96-hour multiple concentration Acute Lethality Test using Rainbow trout from a composite or grab sample, and a 48-hour static acute bioassay using Daphnia magna on a grab or a composite sample will be conducted semi-annually. These two analyses are conducted on the same samples. If <50% survive, sampling frequency increases to once per week. After three consecutive tests demonstrate 50% or greater survival, sampling frequency returns to semi-annually.

GAS PLANTS
WASTEWATER LIMITS AND MONITORING REQUIREMENTS

Shell Canada Limited – Caroline Sour Gas Plant
Industrial Runoff samples are taken at the discharge point of the Industrial Runoff holding ponds.

Shell Canada Limited - Waterton Sour Gas Plant
Industrial Wastewater is sampled prior to mixing with North Drywood Creek.
Industrial Runoff is sampled in the surface runoff building.
Industrial Runoff from Batch Releases is monitored prior to release to North Drywood Creek or Foothills Creek.

Toxicity Testing – Acute Toxicity
Acute Lethality Tests on Rainbow Trout are performed at least once per month. If the 100% test sample of Industrial Wastewater shows acute lethality (<50% survive), another grab sample of the Industrial Wastewater is analyzed. Sampling frequency for acute lethality on Rainbow trout increases to at least once per week. A TRE Plan is developed and implemented. After three consecutive tests demonstrate 50% or greater survival, sampling frequency returns to once per month.
At least once per month a 48-hour static acute bioassay using Daphnia magna is performed.

Chronic Toxicity
Chronic/sublethal toxicity sampling and analysis is required to be conducted at a minimum of four times per year for two years, as defined in approval #258-01-00.

Husky Oil Operations Ltd. - Ram River Sour Gas Plant
Industrial Wastewater is sampled from the groundwater hydrocarbon recovery system water before it goes back to the hydrocarbon recovery system disposal wells.
Industrial Runoff is sampled where the water drains from the plant process area.

Toxicity Testing – Acute Toxicity (Rainbow trout only)
During authorized disposal of the wastewater collected from the groundwater hydrocarbon recovery system back to the hydrocarbon recovery system disposal wells, a 96-hour acute lethality bioassay test using rainbow trout (Oncorhynchus mykiss) on a treated undiluted grab sample of the wastewater is performed.

Chevron Canada Resources Limited – Kaybob South - Beaverhill Lake Gas Unit No. 3 Sour Gas Plant
Industrial Runoff is sampled in the Surface Runoff control facilities.

Amoco Canada Petroleum Company Ltd. – Kaybob South Sour Gas Plant
Industrial Runoff is sampled in the Surface Runoff control facilities.

Petro-Canada Resources - Wildcat Hills Sour Gas Plant
Industrial Runoff is sampled in the Surface Runoff control facilities.

Shell Canada Limited - Jumping Pound Sour Gas Plant
Samples are collected prior to mixing with the Pile of Bones Creek or any other waters.
Flow measurement devices selected for liquid effluent discharges shall be capable of measuring flows with a maximum deviation of less than +/- 5% from true discharge rates throughout the range of expected flow volumes.
Industrial Runoff water is released directly from the Surface Runoff treatment facilities to the Pile of Bones Creek watershed.

Toxicity Testing – Acute Toxicity (Rainbow trout only)

GAS PLANTS
WASTEWATER LIMITS AND MONITORING REQUIREMENTS

At least once per calendar month a 96-hour acute static bioassay, using rainbow trout (Oncorhynchus mykiss) on an undiluted grab or composite sample is performed prior to discharge to the Pile of Bones Creek.

Gulf Canada Resources Limited - Strachan Sour Gas Plant
Industrial Runoff samples are taken from within the Surface Runoff control facilities.

Crestar Energy Inc. – Vulcan Sour Gas Plant
Industrial Runoff samples are taken within the Surface Runoff control facilities.

AltaGas Services Inc. - Sedgewick Sour Gas Processing Plant
There are no limits or monitoring requirements associated with this facility.

Novagas Clearinghouse Ltd. – Zama Sour Gas Plant #3
There are no limits or monitoring requirements associated with this facility.

Morrison Petroleums Ltd. – Wizard Lake Sour Gas Plant
There are no limits or monitoring requirements associated with this facility.

Novagas Clearinghouse Ltd. – Zama Sour Gas Plant #2
There are no limits or monitoring requirements associated with this facility.

Petro-Canada – Empress Straddle Gas Plant
Toxicity Testing – Acute Toxicity (Rainbow trout only)
Acute Lethality Test on Rainbow trout is performed once per month. If the sample of wastewater shows acute lethality (less than 50% survive), another grab sample of the wastewater is analyzed with a 96-hour Multiple Concentration Acute Lethality Test Using Rainbow Trout. Sampling for Acute Lethality on Rainbow Trout (Multiple Concentration Test) increases to at least once per week thereafter.
Sampling frequency returns to once every month after three consecutive tests demonstrate 50% or greater survival, unless otherwise directed by the Director of Pollution Control.

Alberta Natural Gas – Cochrane Extraction Gas Plant
Industrial Runoff is released to surrounding watershed areas.
Industrial Wastewaters are released from the cooling water system to the Bow River.

MEAT PROCESSING PLANTS
WASTEWATER LIMITS AND MONITORING REQUIREMENTS

Cargill Foods - High River Red Meat Integrated Plant
Industrial Wastewater is discharged from the treatment facility to the Frank Lake pipeline.
Industrial Wastewater is sampled after the treatment processes are complete, and prior to discharge to the Frank Lake pipeline.

Lakeside Packers, a Division of Lakeside feeders Ltd. Brooks Red Meat Processing Plant
Industrial Wastewater is sampled for flow on the outfall to the wastewater ponds.
Sampling is done at the final effluent lagoons prior to irrigation.
Monitoring is only done during April, May, June, July, August, and September (when irrigation is performed.
Samples are taken at least 20 days apart.

OILSEED PROCESSING PLANTS
WASTEWATER LIMITS AND MONITORING REQUIREMENTS

The approvals for both facilities are currently being renewed, and information in this document is taken from the draft versions of the renewals.

ADM Agri-Industries Ltd. – Lloydminster Oilseed Processing Plant
Industrial Wastewater is released to the City of Lloydminster municipal sanitary system subject to the City's bylaws. Therefore, there are no limits or monitoring for this facility.

Canadian Agra Foods Inc. – Sexsmith Oilseed Processing Plant
Industrial Wastewater and Industrial Runoff are released from the Industrial Wastewater Control System.

POTATO PROCESSING PLANTS
WASTEWATER LIMITS AND MONITORING REQUIREMENTS

Pak-Wel Produce Limited – Vauxhall Potato Processing Plant

Discharge Flow from the Industrial Wastewater control facilities will be monitored on a monthly basis after September 1, 1999, at the same time grab samples are taken to monitor the other parameters.
Industrial Wastewater is monitored during periods of measurable flow from the Industrial Wastewater control facilities.

ConAgra Limited – Taber Vegetable Processing Plant

Industrial Runoff is released from the Industrial Runoff control system to the surrounding watershed or to the Industrial Wastewater control system.
Wastewater irrigation releases onto land, from the Industrial Wastewater control system shall only occur if EC and SAR water quality values meet the application conditions as specified.
Treated Industrial Wastewater will be used for irrigation on lands authorized in writing by the Director.
Flow is measured at the discharge points of the aerated storage ponds, and the dissolved air floatation unit of the Industrial Wastewater control system.
Flow is monitored on a daily basis from both of these locations, but only during irrigation season (May through September) from the discharge points of the aerated storage ponds.

POWER PLANTS
WASTEWATER LIMITS AND MONITORING REQUIREMENTS

Alberta Power Limited - H.R. Milner Thermal Electric Power Plant
TSS concentration limit shall be 50 mg/L absolute or 10mg/L absolute above the background level, whichever is greater.
Iron concentration limit shall be 2 mg/L absolute or the concentration of iron in the background level, whichever is greater.
Industrial Wastewater samples are taken from the discharge point of the wastewater ponds prior to mixing with the Smoky River.
Industrial Runoff samples are taken from the discharge point from the plant site runoff ponds prior to mixing with the Smoky river (when discharges occur).
Monitoring for Free Available Chlorine is required during and 2 weeks after chlorine addition to the cooling towers.

Toxicity Testing – Acute Toxicity
A 96-hour multiple concentration Acute Lethality Test using Rainbow trout, and a 48-hour static acute bioassay using Daphnia magna are conducted once every three months.

Alberta Power Limited - Battle River Thermal Electric Power Generating Plant
Industrial Wastewater from the Ash Lagoon is released to the cooling water return canal and the Battle River reservoir.

Toxicity Testing – Acute Toxicity (Rainbow trout only)
A 96-hour Acute Lethality Test using Rainbow trout is performed at least once every three months.
If the 100% test sample of industrial wastewater for the Acute Lethality Test on Rainbow trout shows acute lethality (<50% survive), another grab sample of the industrial wastewater is analyzed. Sampling for acute lethality on Rainbow trout increases to at least once per week, and a TRE Plan is developed and implemented. After three consecutive tests demonstrate 50% or greater survival, sampling frequency returns to once every three months.

Alberta Power Limited - Sheerness Thermal Electric Power Generating Plant
Industrial Wastewater is sampled at the flow metering station after it is released from the cooling pond and the regeneration lagoon.
Blowdown Canal Effluent is sampled from the flow metering station or immediately downstream after release from the regeneration lagoon.

TransAlta Utilities Corporation - Sundance Thermal Electric Power Plant
Cooling Pond Wastewater is Industrial Wastewater released from the cooling pond into the North Saskatchewan River.
Settling Pond Wastewater consists of releases of Industrial Wastewater from the settling ponds into Lake Wabamun during periods of excessive rainfall.
Limits on Industrial Wastewater from settling ponds are only applicable when runoff is <190 L/s.

TransAlta Utilities Corporation - Wabamun Thermal Electric Power Plant
Receiving waters are monitored for Temperature.
Cooling Water samples taken at the inlet and outlet locations of the cooling water ponds.
Receiving Water samples are taken outside the zone of influence of thermal discharge from the plant.
The final Industrial Wastewater flow measurements shall not deviate from the true release rate by more than +/- 10%, throughout the range of flow volumes.
Industrial Wastewater is sampled from the Ash Lagoon prior to being released into Lake Wabamun.

POWER PLANTS
WASTEWATER LIMITS AND MONITORING REQUIREMENTS

Toxicity Testing – Acute Toxicity
A 96-Hour multiple concentration Acute Lethality Test using Rainbow trout, from a grab sample, and a 48-hour static acute bioassay using Daphnia magna on grab or a composite sample are conducted once every year. These two analyses are to be conducted on the same samples. If the control response exceeds 10% in any of the bioassays, it is repeated.

Chronic Toxicity
Subacute/chronic lethality tests
At least once every two months 7-day Fathead minnow, 4-day Selenastrum capricornutum, and 7-day Ceriodaphnia dubia bioassays from grab samples are performed. If the control response exceeds 20% in any of the bioassays, it is repeated.
Chronic toxicity is monitored until the Director is satisfied that chronic toxicity is not a problem for this effluent.

TransAlta Utilities Corporation - Keephills Thermal Electric Power Plant
The final industrial wastewater flow measurements shall not deviate from the true release rate by more than +/- 10%, throughout the range of flow volumes.
Cooling Pond Wastewater is Industrial Wastewater released from the cooling pond into the North Saskatchewan River.
Settling Pond Wastewater consists of releases of Industrial Wastewater from the settling ponds.

Edmonton Power Inc. - Clover Bar Thermal Electric Power Generating Plant
Industrial Wastewater is sampled downstream of the oil trap prior to mixing with the North Saskatchewan River.
Chlorinated Condenser Cooling Water is sampled from the outfall at the North Saskatchewan River.
During chlorination of Condenser Cooling Water, the chlorine dosage rate shall not exceed 130 kg/hr.
Sodium Fluorescein dye can be used for cooler leak detection, providing releases into the North Saskatchewan River are less than 0.1 mg/L.

Edmonton Power Inc. - Rossdale Thermal Electric Power Generating Plant
Sodium Fluorescein dye can be used for cooler leak detection, providing the solution concentration released into the North Saskatchewan River is less than 0.1 mg/L.
Boiler Wet Storage Water is released to the North Saskatchewan River.

Edmonton Power Authority - Genesee Thermal Electric Power Generating Plant
Industrial Wastewater is released from the cooling pond via the cooling pond blowdown line to the North Saskatchewan River.

The City of Medicine Hat - Medicine Hat Thermal Power Plant
Condenser Cooling Water is released into the South Saskatchewan River.

PULP AND PAPER MILLS
WASTEWATER LIMITS AND MONITORING REQUIREMENTS

Production Capacity is design production capacity, which may be exceeded.

Acute Lethality Testing is performed as follows:
At least once per calendar month a 96-hour static acute bioassay is performed. If <50% survive the bioassay is repeated. Monitoring increases to at least once per week, until three consecutive tests show 50% or more survival, then monitoring returns to once per month. If <50% of the rainbow trout survive, a Toxicity Reduction Evaluation (TRE) plan is implemented.

At least once per week a 48-hour static acute bioassay using Daphnia magna is performed. If <50% survive in the 100% concentration test sample, the process is repeated on rainbow trout. Measurements increase to at least three times per week, with at least 48 hours between separate grab samples, until three consecutive bioassays demonstrate >50% survival. Then sampling frequency reverts to once per week. If <50% of the rainbow trout survive, increased monitoring frequency and TRE plan is followed as specified. If any control response exceed 10% in any bioassay, that bioassay is be repeated.

THERMOMECHANICAL PROCESS (TMP)

Alberta Newsprint Company Ltd.
Non-Contact Cooling Water is released to the Athabasca River or the stormwater retention pond.
Industrial Runoff is released to the stormwater retention pond for release directly to the Athabasca River, or to the Industrial Wastewater control system for treatment.
Industrial Wastewater samples are taken prior to mixing with the Athabasca River or any other waters
Stormwater Pond discharges are sampled at the outlet structure of the Stormwater Pond, prior to mixing with the Athabasca River or any other waters.
Non-Contact Cooling Water is sampled at the Non-Contact Cooling Water discharge location, prior to mixing with the Athabasca River or any other waters.

If the dissolved oxygen in the Peace River falls below 6.5 mg/L, the approval holder shall reduce or cease discharging as authorized in writing by the Director.

Final Industrial Wastewater flow measurements can not deviate from the true release rates by more than +/- 10%, throughout the normal range of flow volumes.

Resin and Fatty Acids and Ammonia-Nitrogen samples will be obtained on the same day as the acute lethality bioassay on Rainbow trout, as both parameters are common causes of toxicity in pulpmill wastewter.

Toxicity Testing
Acute Lethality Testing is performed as described above.
Both the 96-hour static acute and 48-hour static acute bioassays will be conducted on the same samples.

Sublethal/chronic toxicity
At least semi-annually, with one summer and one winter test each year, the 7-day Fathead minnow, 4-day Selenastrum capricornutum, and 7-day Ceriodaphnia dubia bioassays are performed. If the control response exceeds 20% in any of the bioassays, it is repeated.

Millar Western Pulp (Whitecourt) Ltd.
Industrial Wastewater samples are taken prior to mixing with the Athabasca River or any other waters, including surface runoff.
Sanitary sewage is discharge to the Town of Whitecourt sanitary sewage system.
Non-Contact Cooling Water is sampled at the Non-Contact Cooling Water discharge, prior to mixing with the wastewater or the McLeod River.

Toxicity
Acute Lethality Testing is performed as described above.

Sublethal/chronic toxicity
At least four times per year, once every three years, the 7-day Fathead minnow, 4-day Selenastrum capricornutum, and 7-day Ceriodaphnia dubia bioassays are performed. If the control response exceeds 20% in any of the bioassays, it is repeated.

Slave Lake Pulp Corporation
Industrial Wastewater samples are taken prior to mixing with the Lesser Slave River or any other waters, including surface runoff.

The Stormwater Pond water is sampled from the stormwater and chip and log storage runoff ponds prior to mixing with the wastewater or any other waters.

The discharge from the Stormwater Pond and the chip and log storage runoff pond may be directed to the Lesser Slave River, but shall be controlled in such a manner that the sum of BOD and TSS in this discharge, when added to the BOD and TSS respectively in the wastewater discharged, does not exceed the Daily Limit or the Maximum Daily Average discharge of BOD and TSS allowed in the wastewater limits.

Toxicity Testing
Acute Lethality Testing is performed as described above.

Sublethal/chronic toxicity
At least four times per year, once every three years, the 7-day Fathead minnow, 4-day Selenastrum capricornutum, and 7-day Ceriodaphnia dubia bioassays are performed. If the control response exceeds 20% in any of the bioassays, it is repeated.

BLEACHED KRAFT PROCESS (BKP)
Alberta Pacific Forest Industries Inc.
Final effluent flow devices must be capable of measuring flows within +/-5% of true discharge rates at all times.
Industrial Wastewater is released from the effluent treatment facilities via pipeline to the Athabasca River Samples are taken prior to mixing with the Athabasca River, or any other waters.

Toxicity
Acute Lethality Testing is performed as described above.

Both the 96-hour static acute and 48-hour static acute bioassays will be conducted on the same samples.

Sublethal/chronic toxicity
At least four times per calendar year, with at least two months between tests, the 7-day Fathead minnow, 4-day Selenastrum capricornutum, and 7-day Ceriodaphnia dubia bioassays are performed. If the control response exceeds 20% in any of the bioassays, it is repeated.

Daishowa-Marubeni International Ltd.
Final Industrial Wastewater flow measurements shall not deviate from the true release rates by more than +/- 10%, throughout the normal range of flow volumes.
Industrial Wastewater will be released from the Industrial Wastewater control facility via pipeline to the Peace River.
Industrial Runoff is released from the Stormwater Retention Pond directly to the Peace River.

If the dissolved oxygen in the Peace River falls below 6.5 mg/L, the approval holder shall reduce or cease discharging as authorized in writing by the Director.

Flows of Non-Contact Cooling Water discharge can be estimated until Nov. 1, 1999, after which the approval holder shall continuously measure the flows with a recorder.

If the BOD or TSS of the Non-Contact Cooling Water sample exceeds 10 mg/L, sampling frequency is increased to three composite samples per week for 30 days. If these results show the discharge exceeds 10 mg/L on a consistent basis, the approval holder collects samples of the Non-Contact Cooling Water discharge on a daily basis and determines the BOD and TSS. The mass determination for BOD and TSS is then summed to obtain the mass discharge of the industrial wastewater. The combined total is subject to the Industrial Wastewater limits.

Resin and Fatty Acids and Ammonia-Nitrogen samples will be obtained on the same day as the Acute Lethality Test on Rainbow trout, as both parameters are common causes of toxicity in pulpmill wastewter.

The samples for Chlorinated Phenolics and Chlorate/Chlorite will be obtained on the same day.

Industrial Wastewater samples are taken prior to mixing with the Peace River or any other waters.
Stormwater Retention Pond discharges are sampled at the discharge location of the Stormwater Retention Pond, prior to mixing with the Peace River or any other waters.
Non-Contact Cooling Water is sampled at the Non-Contact Cooling Water discharge location, prior to mixing with the Peace River or any other waters.
Chiller Water is sampled at the discharge location prior to mixing with the Non-Contact Cooling Water or any other waters.

Flow, pH and Specific Conductance of Non-Contact Cooling Waters are analyzed for prior to mixing with chiller water.

Toxicity
Acute Lethality Testing is performed as described above.

Both the 96-hour static acute and 48-hour static acute bioassays will be conducted on the same samples.

Sublethal/chronic toxicity
At least twice per calendar year the 7-day Fathead minnow, 72-hour Selenastrum capricornutum, and 7-day Ceriodaphnia dubia bioassays are performed. If the control response exceeds 20% in any of the bioassays, it is repeated.

Weldwood of Canada Limited
Final Industrial Wastewater flow measurements shall not deviate from the true release rates by more than +/- 10%, throughout the normal range of flow volumes.
Resin and Fatty Acids and Ammonia-Nitrogen samples will be obtained on the same day as the Acute Lethality Test on Rainbow trout, as both parameters are common causes of toxicity in pulpmill wastewter.

This facility discharges to the Athabasca River.

If the dissolved oxygen in the Peace River falls below 6.5 mg/L, the approval holder shall reduce or cease discharging as authorized in writing by the Director.

The samples for Chlorinated Phenolics and Chlorate/Chlorite will be obtained on the same day.

Toxicity Testing
Acute Lethality Testing is performed as described above.

Both the 96-hour static acute and 48-hour static acute bioassays will be conducted on the same samples.

Sublethal/chronic toxicity
At least twice per calendar year, for each year over the three year cycles required under federal regulations, the 7-day Fathead minnow, 4-day Selenastrum capricornutum, and 7-day Ceriodaphnia dubia bioassays are performed. If the control response exceeds 20% in any of the bioassays, it is repeated.

Non-Contact Cooling Water is sampled prior to mixing with the release from the aerated stabilization basin.
Industrial Wastewater includes sewage, plant wastewater, and landfill leachate.

Weyerhaeuser Canada Ltd.
Storm Sewer samples are taken from the discharge point of the Storm Sewer, prior to the discharge mixing with the Wapiti River.

Resin and Fatty Acids and Ammonia-Nitrogen samples will be obtained on the same day as the Acute Lethality Test on Rainbow trout, as both parameters are common causes of toxicity in pulpmill wastewter.

Final Industrial Wastewater flow measurements shall not deviate from the true release rates by more than +/- 10%, throughout the normal range of flow volumes.

If the dissolved oxygen in the Peace River falls below 6.5 mg/L, the approval holder shall reduce or cease discharging as authorized in writing by the Director.

Toxicity
Acute Lethality Testing is performed as described above.

Both the 96-hour static acute and 48-hour static acute bioassays will be conducted on the same samples.

Sublethal/chronic toxicity
At least once per month for December, January, February, and March of each year (at intervals greater than three weeks,) the 7-day Fathead minnow, and 4-day Selenastrum capricornutum bioassays are performed. If the control response exceeds 20% in any of the bioassays, it is repeated.

REFINERIES
WASTEWATER LIMITS AND MONITORING REQUIREMENTS

Canadian Turbo (1993) Inc. – Southern Alberta Refinery – Balzac
Industrial Wastewater released from the refinery site to McDonald Lake consists of storm runoff water and some treated process area wash water.
TSS limits include the volatile portion only.

HUB Oil Company Ltd. – Calgary
No monitoring or limits associated with this facility because no wastewaters are directly discharged to a water body.
Sanitary sewage shall be directed to a septic tank and subsequently hauled to a municipal plant.
The approval holder disposes of wastewater by deepwell injection to an Alberta Energy and Utility Board approved well, to the City of Calgary sewage system or as authorized in writing by the Director.

Imperial Oil – Strathcona
This facility release wastewaters into the North Saskatchewan River
Final industrial flow measurements shall not deviate from the true release rate by more than +/- 10%, throughout the range of flow volumes.
Limits for TSS during high Industrial Wastewater runoff shall include only the volatile portion if the flow of industrial wastewater released exceeds 8500 m3/d on the day the sample was obtained.
Industrial Runoff samples are from South Tank Farm Retention Pond (RIB#5) or Distribution Runoff Pond (RIB#4), or any other pond that collects only Industrial Runoff.
Ammonia-Nitrogen must be analyzed for in a sample collected within 24 hours of the sample used for the acute Rainbow trout bioassay.

Toxicity Testing
A 96-hour static acute bioassay on Rainbow trout is performed at least once per month on grab or composite samples of industrial wastewater.
A 48-hour static acute bioassay using Daphnia magna is performed at least once per month on grab or composite samples of industrial wastewater. If the control response exceeds 10% in any of the bioassays, it is repeated.
The 96-hour and 48-hour static acute bioassays are performed on the same samples.

Shell Canada Products Limited – Scotford Oil Refinery
Industrial Wastewater is sampled at the release point from the Effluent Pond, prior to mixing with the North Saskatchewan River, or any other waters.

Toxicity Testing
A 96-Hour Multiple Concentration Acute Lethality Test using Rainbow Trout and a 48-hour static acute bioassay using Daphnia magna is conducted once every three months.

Parkland Refining Ltd. – Bowden Oil Refinery
Acute Lethality Tests using Rainbow trout are conducted once per release.

Petro-Canada Products – Edmonton Oil Refinery
Final industrial wastewater flow measurements shall not deviate from the true release rate by more than +/- 10%, throughout the range of flow volumes.
Industrial Wastewater is released to the North Saskatchewan River.
Ammonia-Nitrogen analysis is performed on the same day as the Rainbow trout bioassays.
TSS limits include the volatile portion only.

REFINERIES
WASTEWATER LIMITS AND MONITORING REQUIREMENTS

Toxicity Testing
A 96-Hour Multiple Concentration Acute Lethality Test using Rainbow Trout, and a 48-hour static acute bioassay using Daphnia magna is conducted once every month.

Husky Oil Operations Ltd. – Lloydminster
Grab samples of Runoff are taken prior to release.